

Trauma, Posttraumatic Stress Disorder, and Perinatal Health

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Overview

- The intersection of mental health and reproductive health
- Impact of trauma and PTSD on perinatal health, particularly among women Veterans
- Potential mechanisms
- Potential treatments

Women and Mental Health



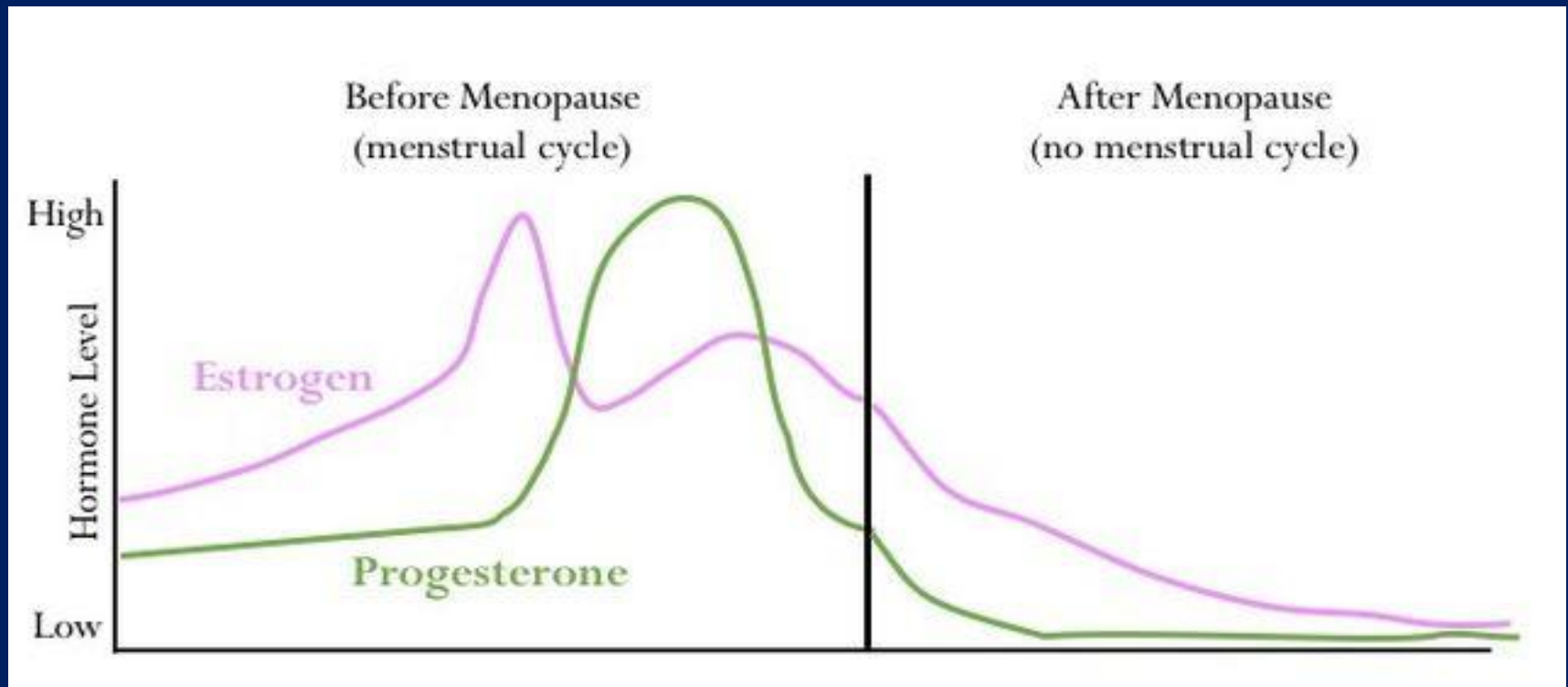
Kessler et al., 1994; Kessler et al., 2003; NCS, 2005



- Mental health problems coincide with reproductive events across a women's life-cycle
 - Ovarian hormones

Mental Health Across the Reproductive Life-Cycle

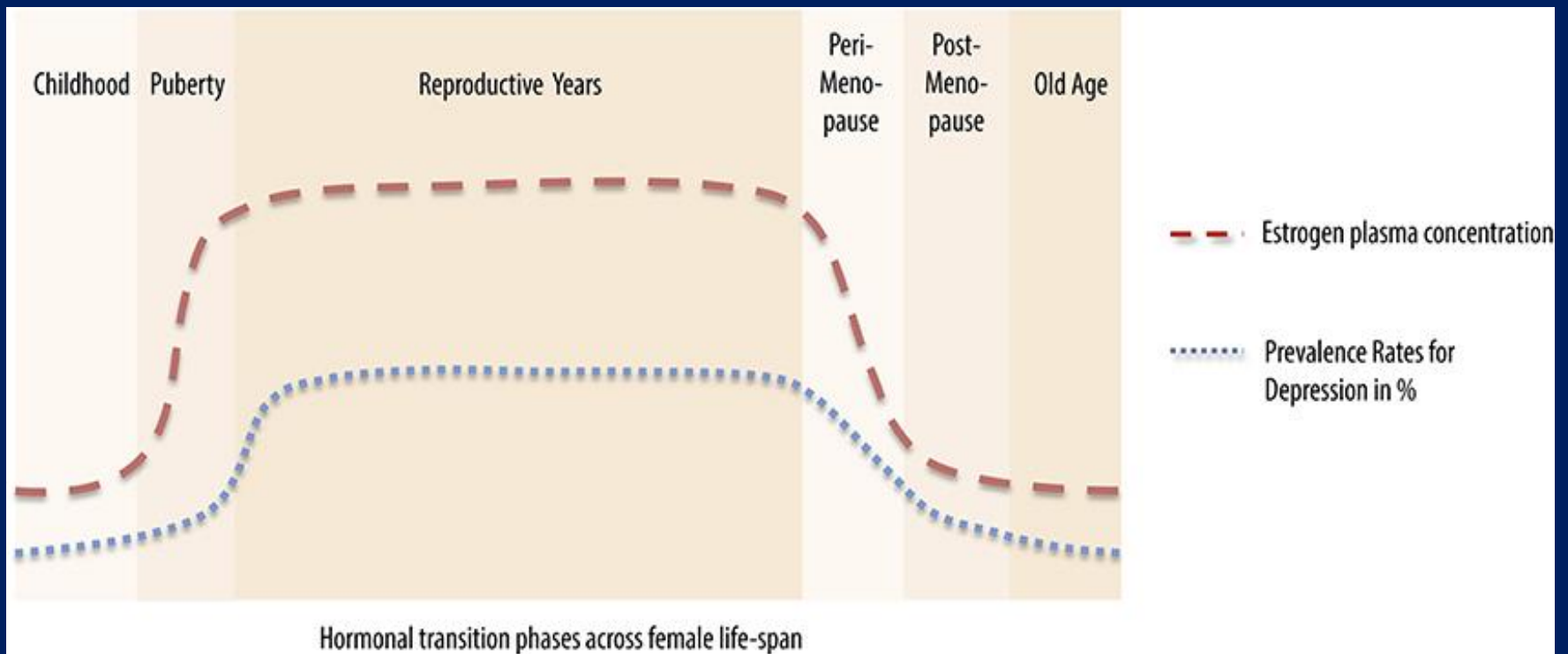
- *Women exposed to greater amounts of hormonal flux across their lifetime
- *Increased vulnerability to mental health problems/symptoms during hormonal flux



Bebbington et al., 1998; Hayward & Sanborn, 2002 ; Howard et al., 2014; McGee et al., 1992; Nillni et al., 2009; Nillni et al., 2015; Reardon et al., 2009

Mental Health Across the Reproductive Life-Cycle: Gender Disparity in Psychopathology

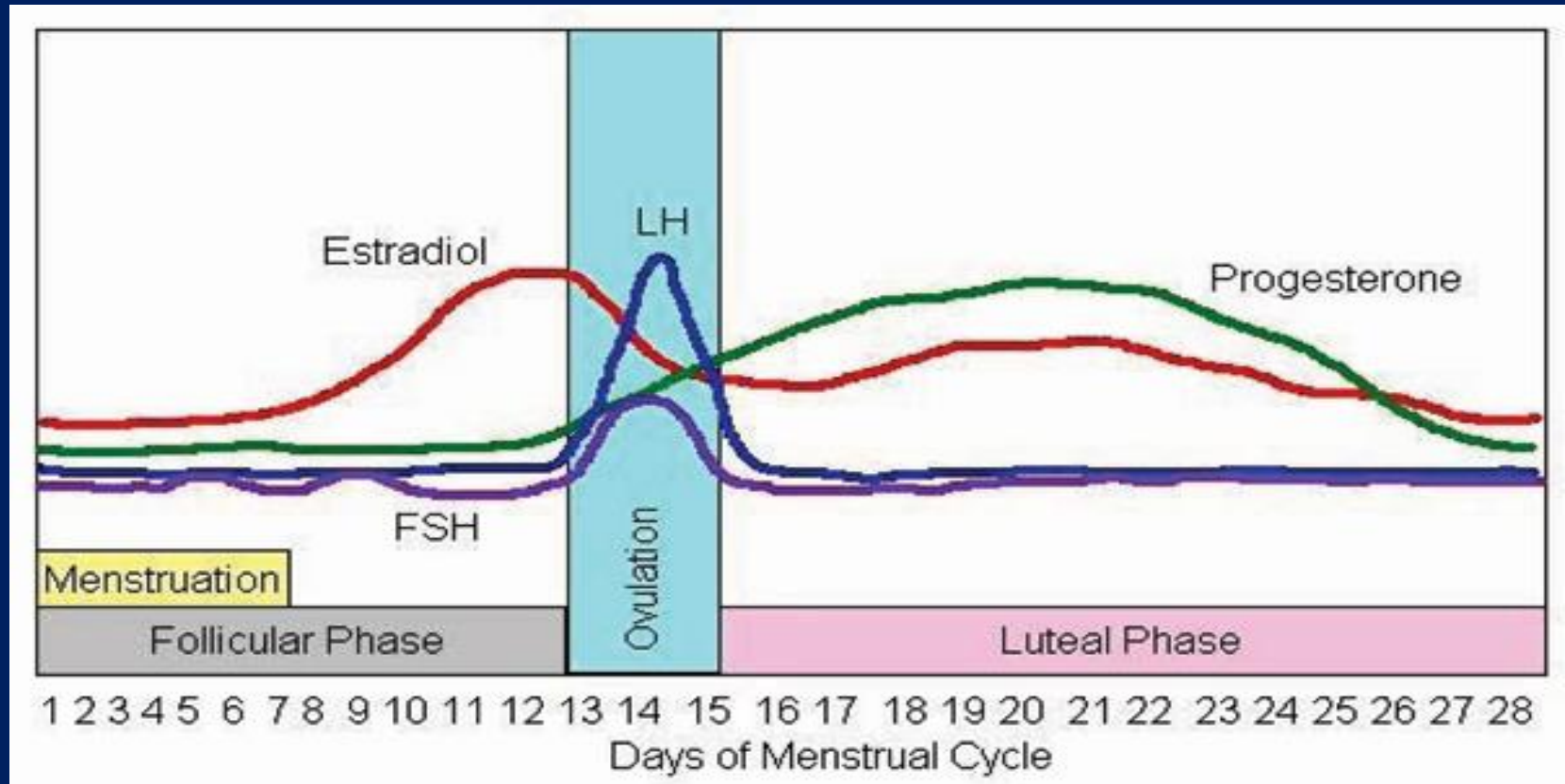
Gender disparity in psychopathology begins in puberty and ends at menopause



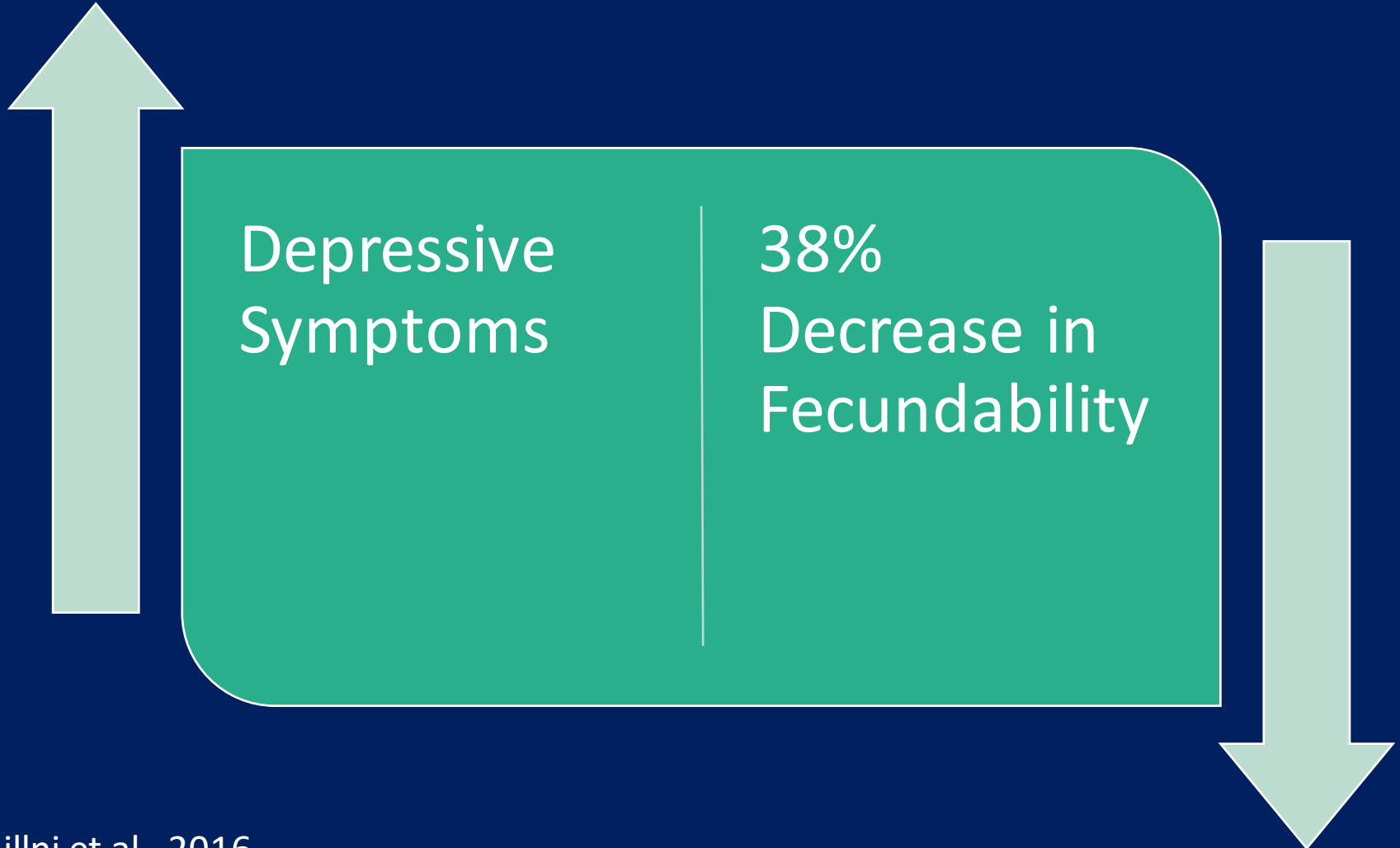
Barth et al., 2015; Bebbington et al., 1998; Nillni et al., 2009; Hayward & Sanborn, 2002; McGee et al., 1992; Reardon et al., 2009

Mental Health Across the Reproductive Life-Cycle: Premenstrual Exacerbations

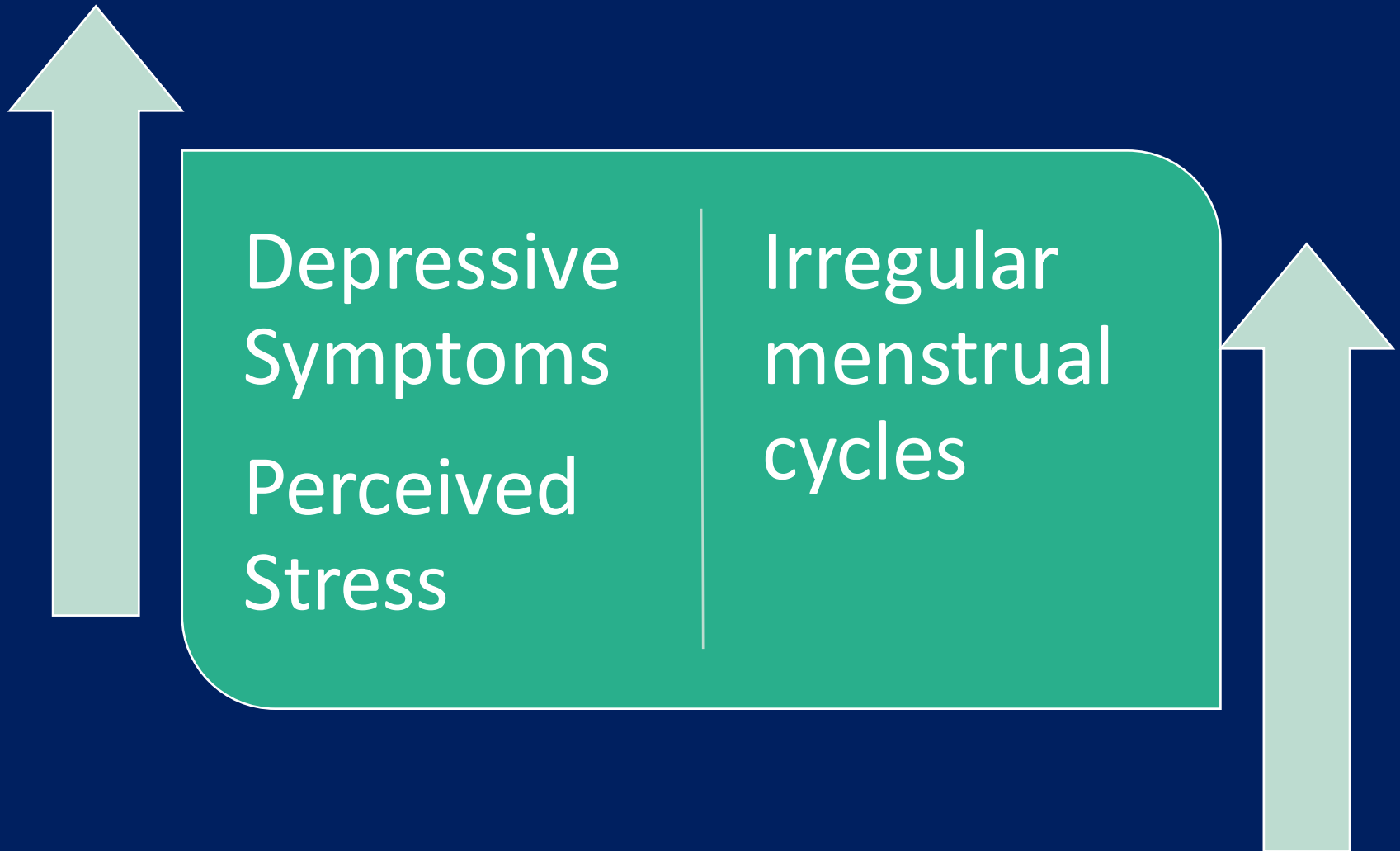
Premenstrual exacerbation of symptoms



Mental Health Across the Reproductive Life-Cycle: Fertility

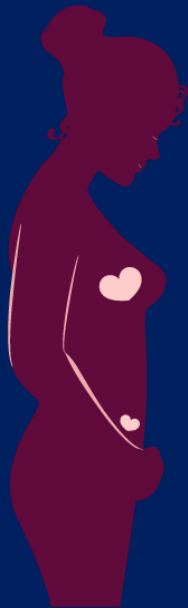


Mental Health Across the Reproductive Life-Cycle: Menstrual Cycle Characteristics

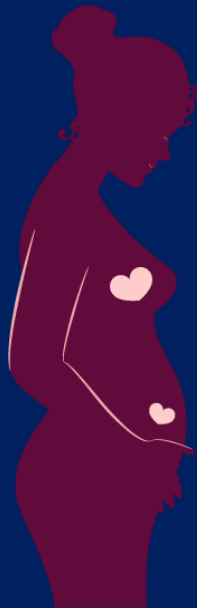


Mental Health Across the Reproductive Life-Cycle: Perinatal Health

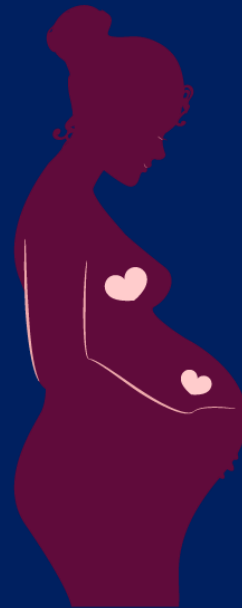
Psychopathology during pregnancy and the postpartum period



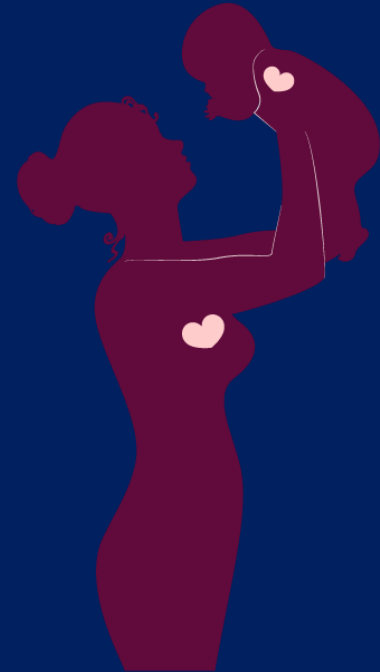
1 Trimester



2 Trimester

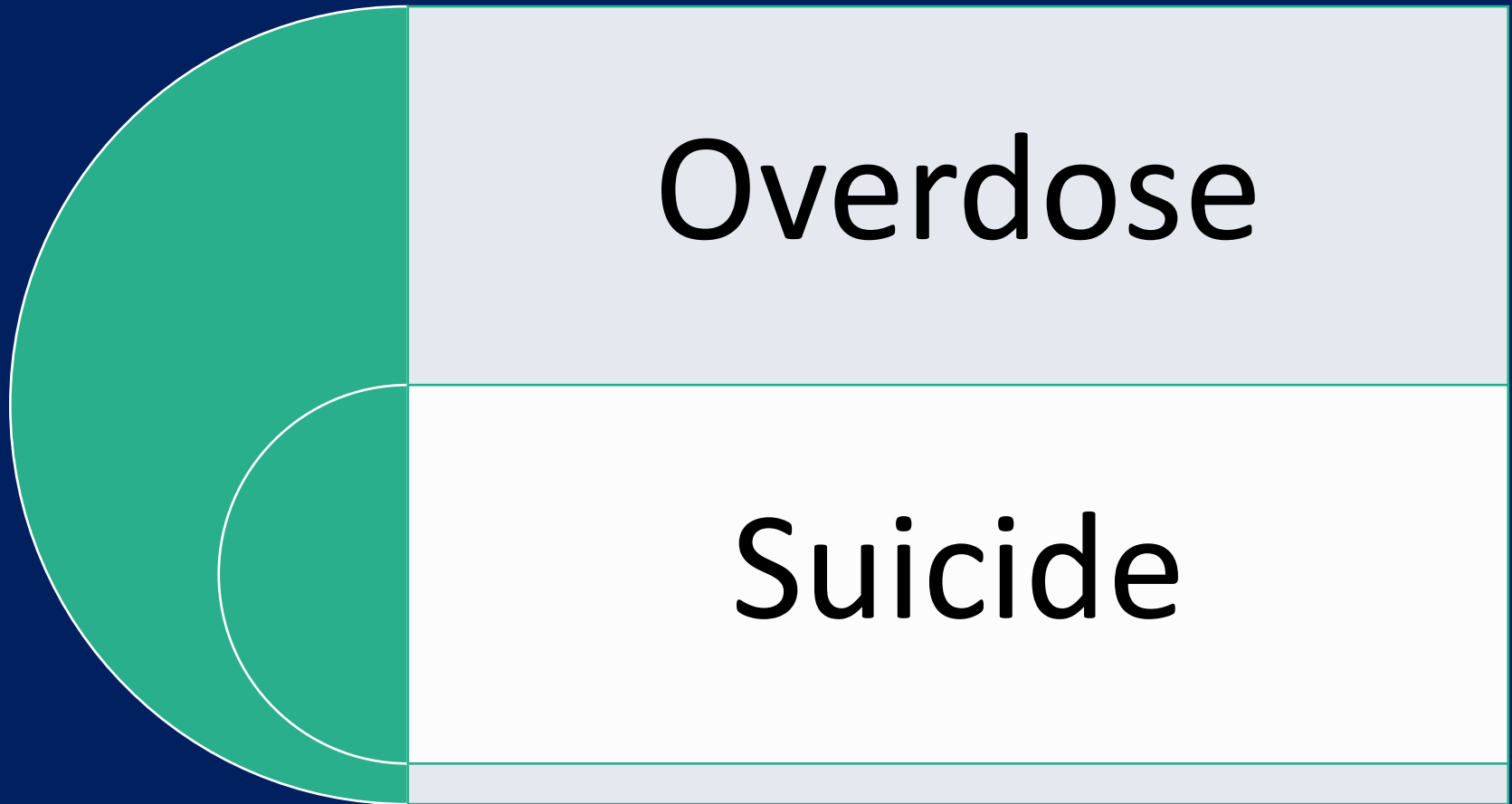


3 Trimester



Birth

Leading Causes of Maternal Mortality in the First Year Postpartum



Periods of hormonal flux are associated with the initiation and/or exacerbation of mental health symptoms for some women
AND mental health symptoms impact facets of reproduction

The Impact of PTSD on Pregnancy Outcomes



Prevalence of Perinatal PTSD

- 8% perinatal PTSD
- 14% perinatal PTSD among racially diverse low-income communities
 - 85% of prenatal MDD is comorbid with full or subthreshold PTSD

Childbirth-Related Postpartum PTSD (PP-PTSD)

- Development of PTSD from a childbirth experience
- 4.6 - 6.3% prevalence of acute PP-PTSD

Risk Factors for PP-PTSD

Negative Perception of Childbirth

- Negative experience during delivery
- Fear of childbirth
- Low internal locus of control during childbirth

Maternal Mental Health

- Previous trauma, particularly childhood sexual trauma
- PTSD or other mental health symptoms during pregnancy

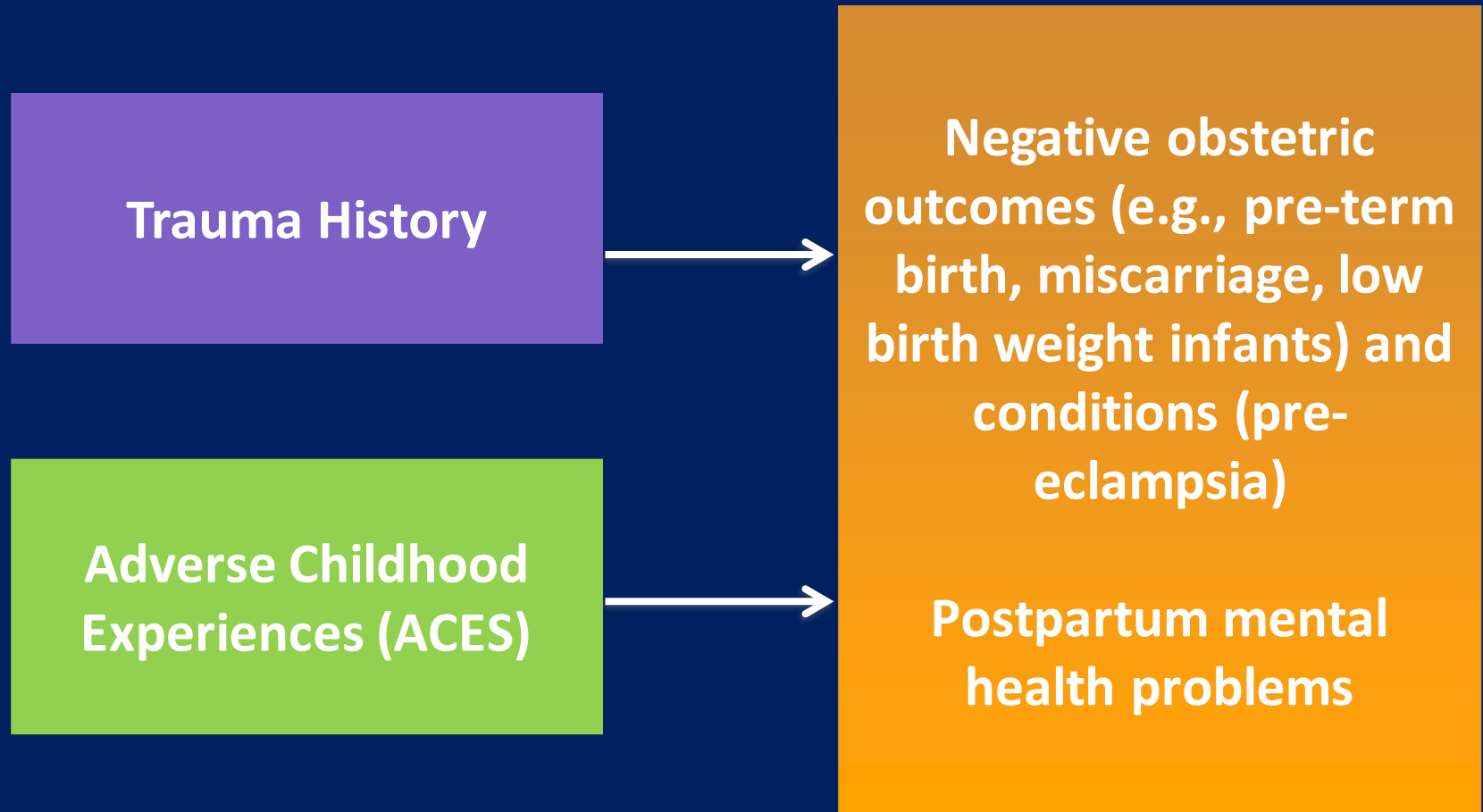
Delivery Mode and Complications

- Emergency c-section
- Complications with pregnancy and/or baby
- Instrumental delivery

Low Social Support

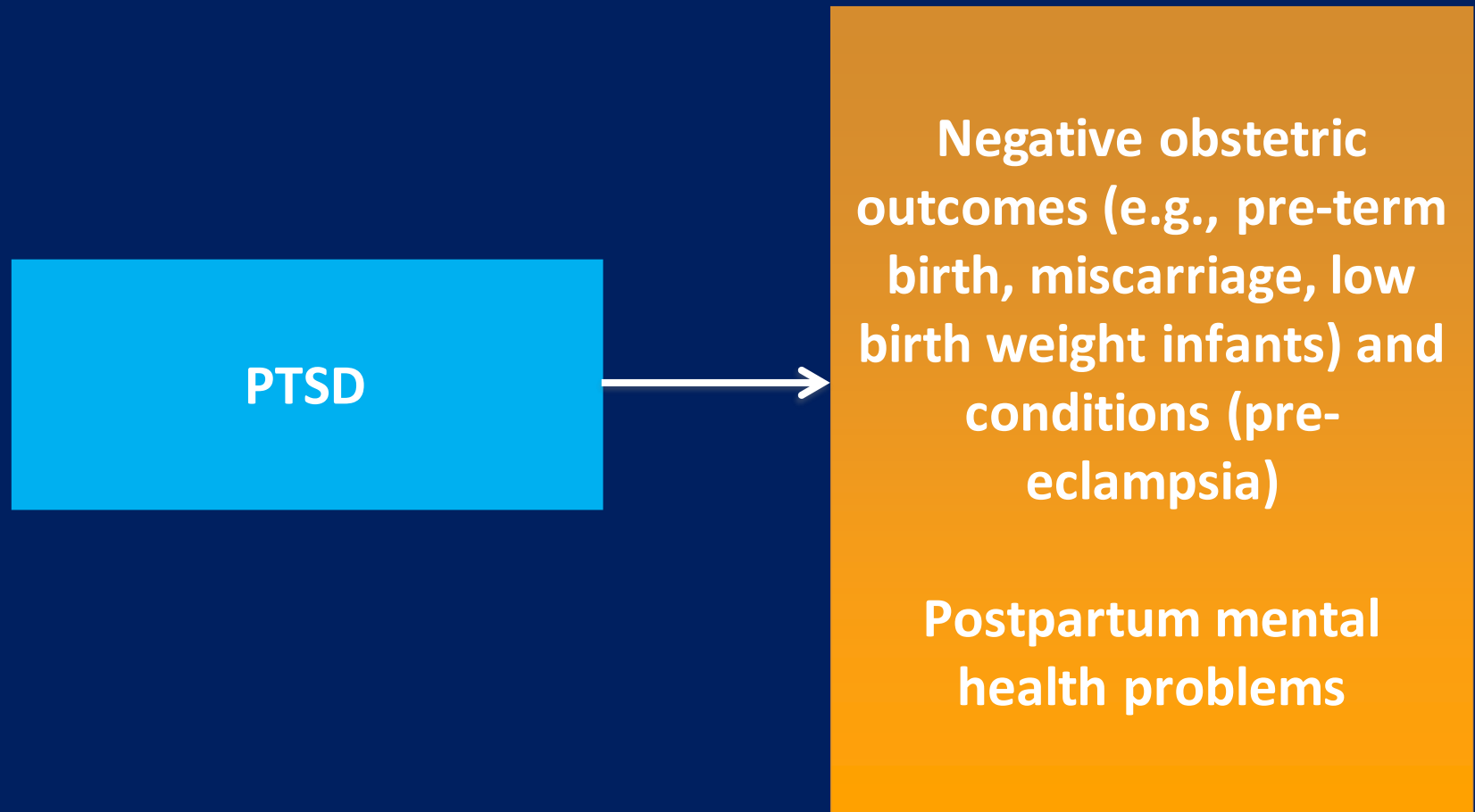
- Staff
- Partner
- Family

The Impact of Trauma on Perinatal Outcomes in the General Population



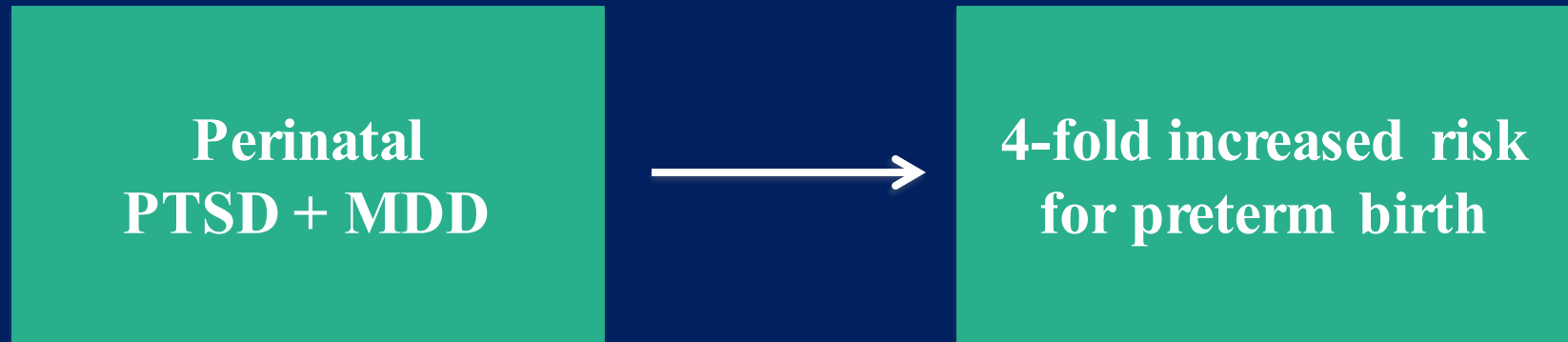
Lev-Weisel et al., 2009; Seng et al., 2001, 2011; Smith et al., 2016; Shapiro et al., 2013; Yonkers et al., 2014

The Impact of PTSD on Perinatal Outcomes in the General Population



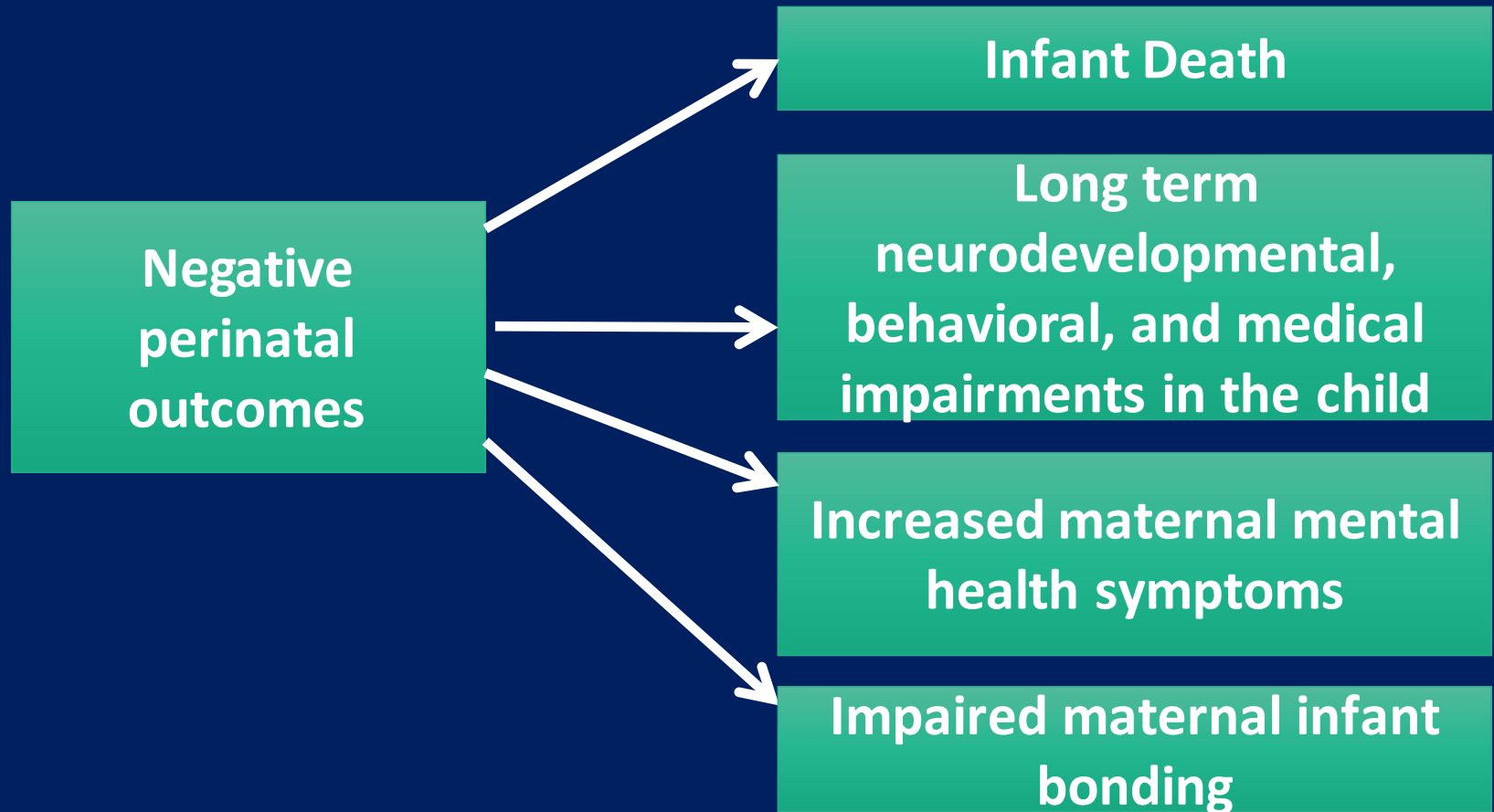
Lev-Weisel et al., 2009; Seng et al., 2001, 2011; Smith et al., 2016; Shapiro et al., 2013; Yonkers et al., 2014

The Impact of PTSD on Preterm Birth in the General Population



- This risk is significant even when controlling for age, race/ethnicity, education, cigarette use, substance use, heavy alcohol use, other psychiatric disorders, psychotropic medication use, and history of preterm births

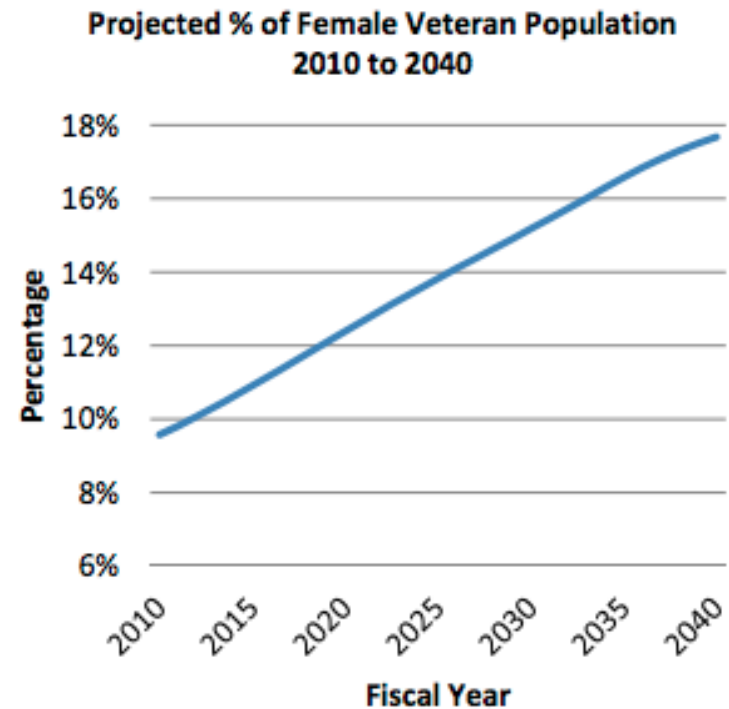
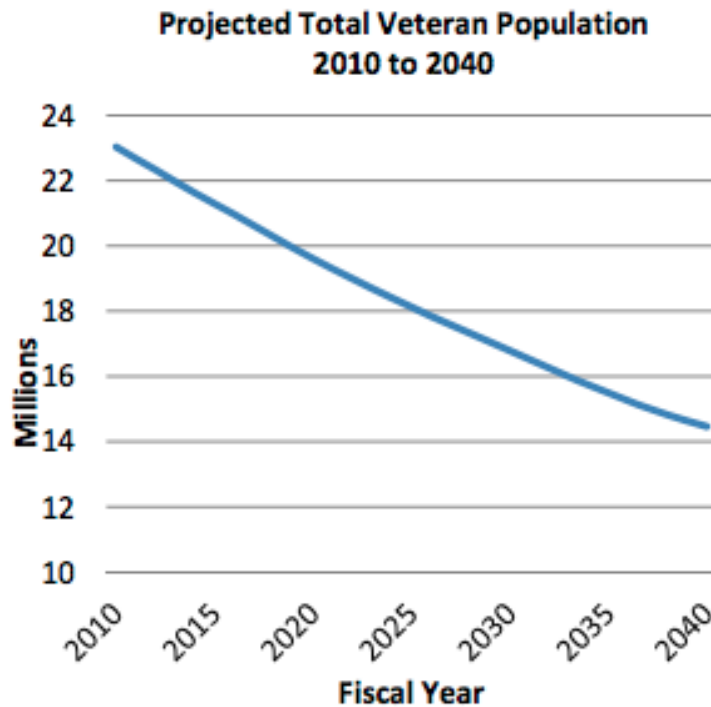
Societal Impact of Negative Perinatal Outcomes



Why should we care about
perinatal health outcomes among
women Veterans?

The Changing Demographics of Women Veterans

Veteran Population Projections: FY2010 to FY2040



Frayne et al., 2014; Friedman et al., 2011

Women
Veterans

Women
Civilians

More Trauma
Exposure

More PTSD

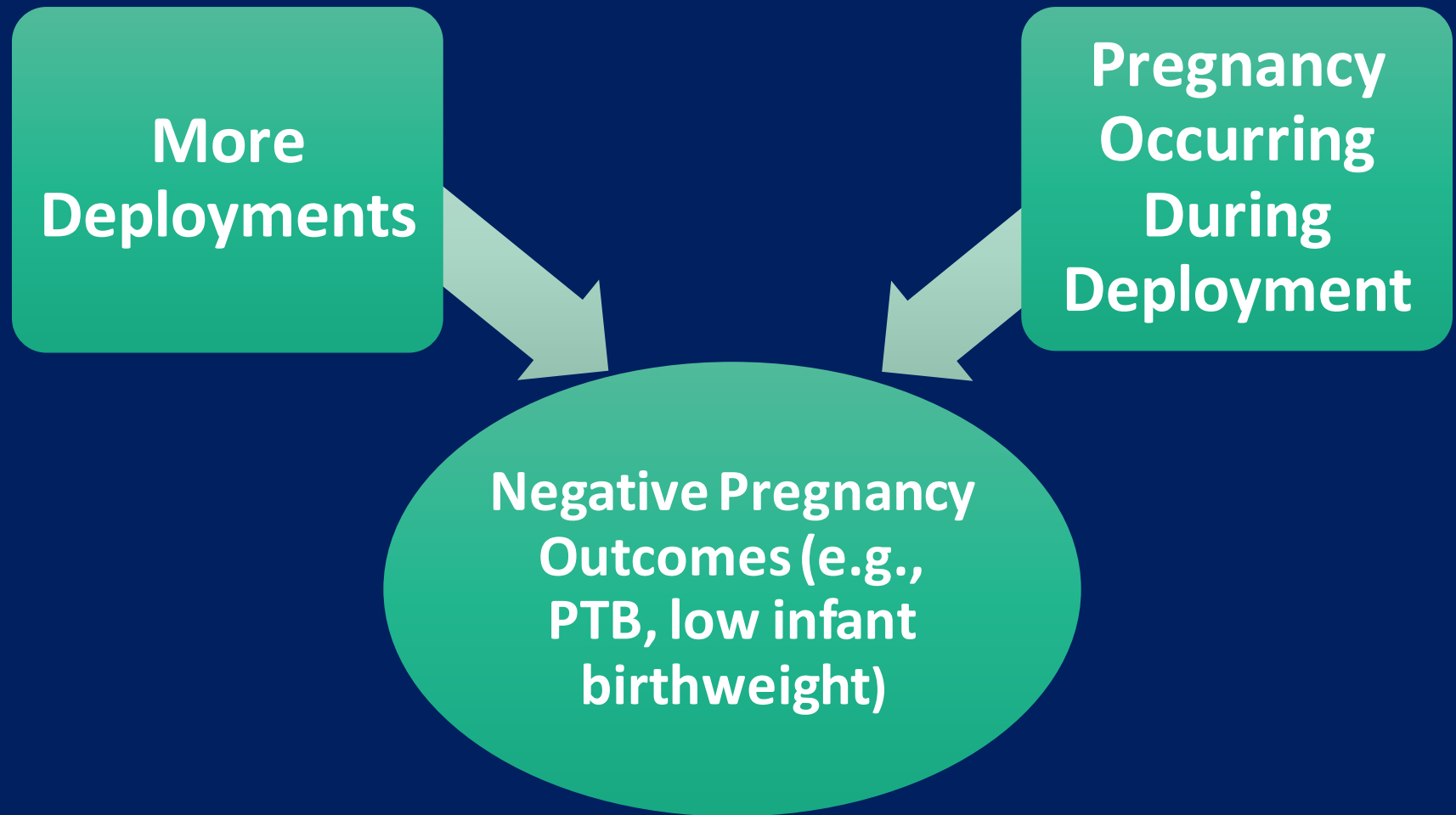


Prevalence of Military Sexual Trauma (MST) Among Women Veterans

- Estimates of MST range from 14 - 49% among women Veterans using VHA



What do we know about
the role of trauma and
PTSD on perinatal
outcomes among
women Veterans?



Deployment = environmental exposures?

**Deployment = changes in health behaviors and
mental health?**

Deployment = Trauma/Stress?

The Impact of Military Sexual Trauma and Warfare Exposure on Women Veterans' Perinatal Outcomes

Nilini, Fox, Cox, Paul, Vogt, & Galovski (2021)

*Psychological Trauma : Theory, Research,
Practice, and Policy*

Longitudinal Investigation of Gender Health and Trauma (LIGHT) Study

- Ongoing nationwide prospective survey study
- Oversampled for Veterans living in high crime communities and women Veterans
 - N = 3,699
 - 59% high crime
 - 53% women
- Surveyed every 4 months (6 surveys total thus far)
- Assessment of trauma history, warfare exposure, military sexual trauma, and lifetime perinatal history (per pregnancy)

PIs: Tara Galovski and Yael Nillni

Women Who Experienced a Pregnancy Following Entering Into the Military



Demographics of Women Who Had a Pregnancy in LIGHT

Race and Ethnicity

- 58% White
- 12% Hispanic
- 33% Black
- 4% Asian
- 12% Other/Multiracial

- 47.7% Non-Hispanic White

Deployment Status

- 49% have deployed

Relationship Status

- 68% are currently in a relationship

Age

• 38.34 (6.94)

Annual Household Income

- 8% < \$15,000
- 21% \$15,000 - \$35,000
- 21% \$35,000 - \$55,000
- 15% \$55,000 – \$75,000
- 15% \$75,000 - \$100,000
- 19% > \$100,000

Education

- 6% High School
- 47% Vocational/Associate's Degree/Some college
- 27% Bachelor's Degree
- 18% Advanced Degree

Branch of Service

- 51% Army
- 18% Navy
- 23% Air Force
- 6% Marine Corps
- 1% Coast Guard

Lifetime History of Perinatal Outcomes Among Women Who Had a Pregnancy in LIGHT

Rates from ANY pregnancy assessed



Preterm Birth

(< 37 GA)

29%

Low Birthweight Infant (<

2500 grams)

9%

**Postpartum
Depression/Anxiety**

45%

Association of Warfare Exposure and Military Sexual Trauma and Perinatal Outcomes

Warfare
Exposure

Military
Sexual
Trauma
(MST)

Preterm birth (<
37 wks GA)

Full term birth
(> 39 wks GA)

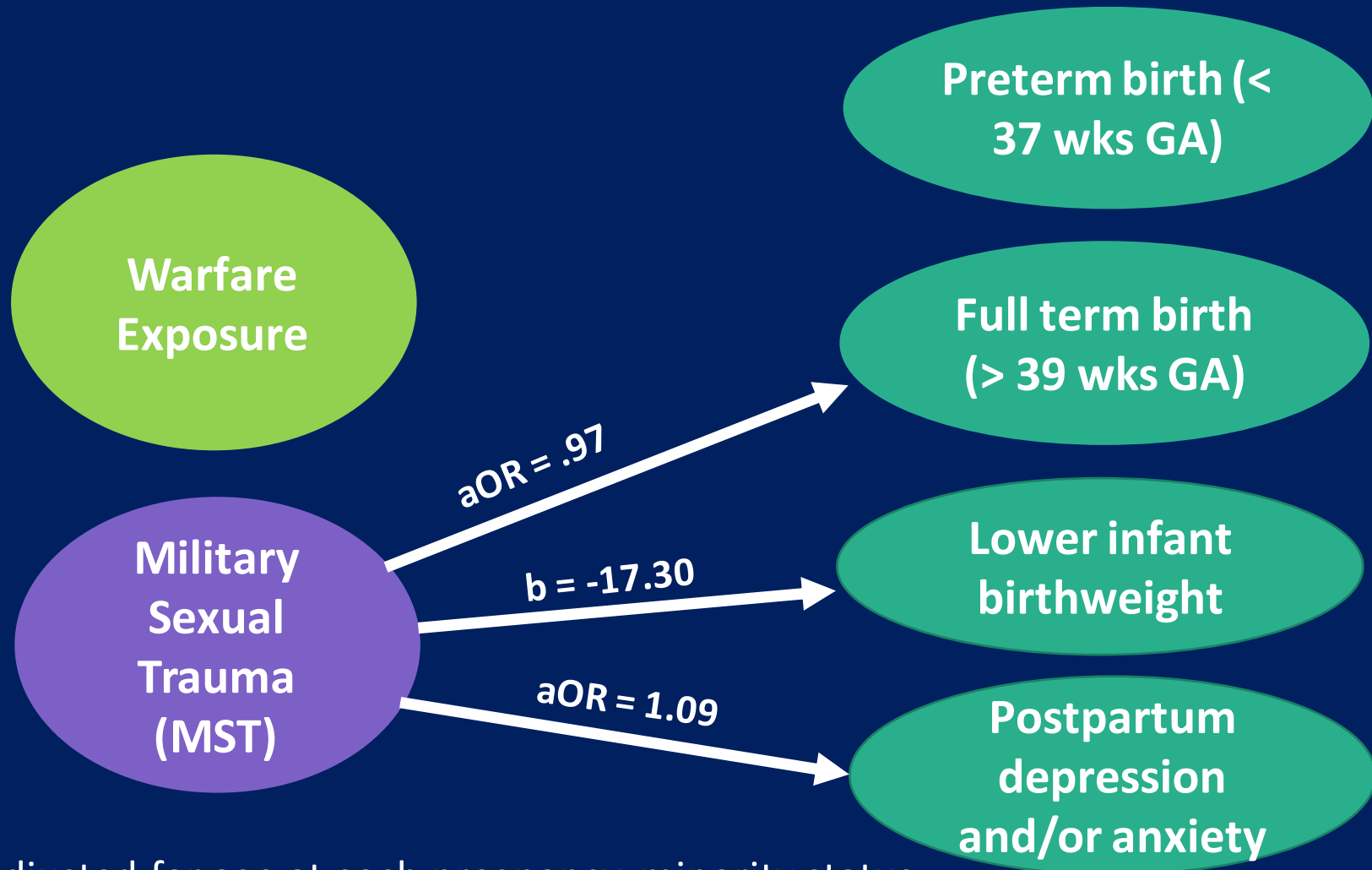
Lower infant
birthweight

Postpartum
depression
and/or anxiety

Adjusted for age at each pregnancy, minority status,
childhood violent trauma exposure, and deployment status

Nillni et al., 2021

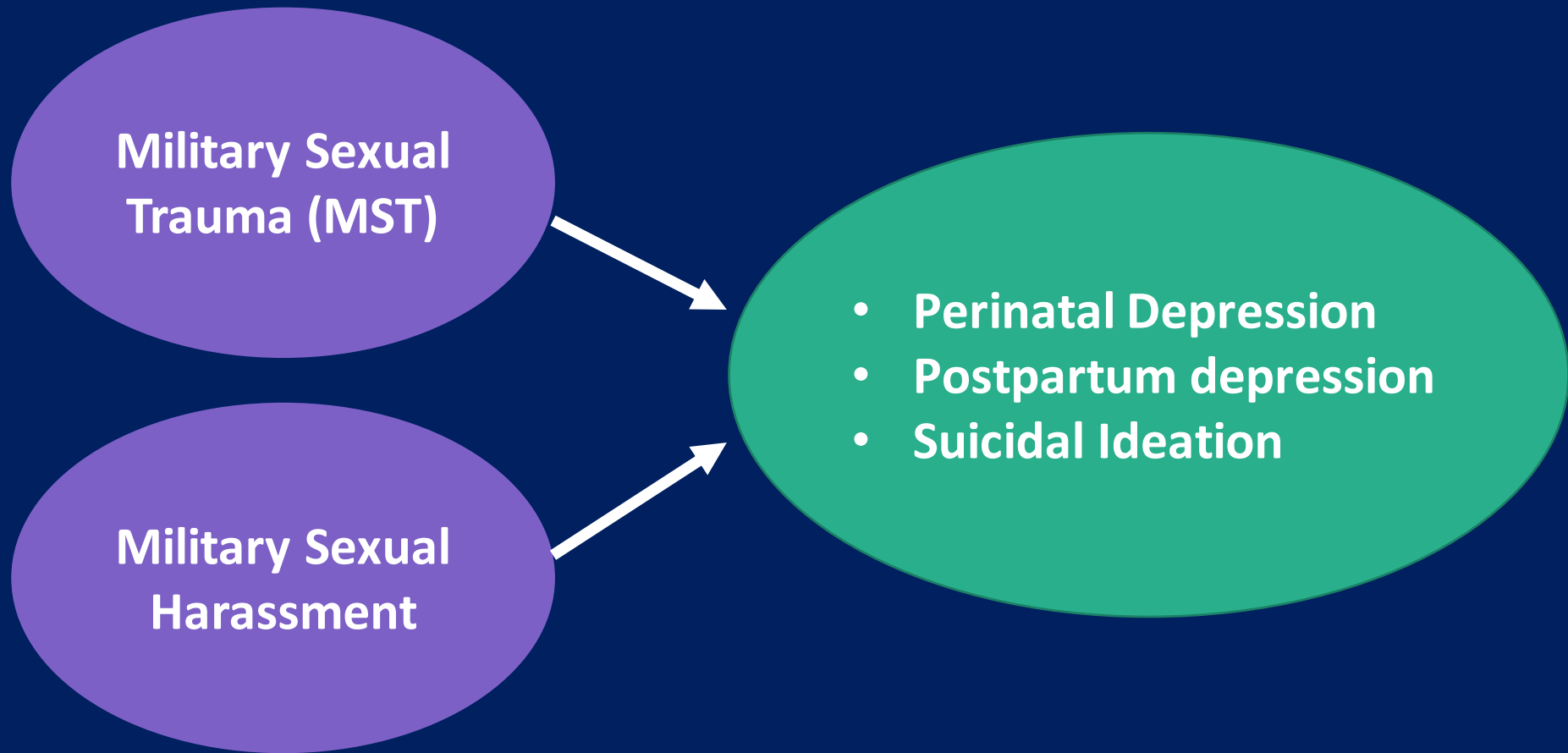
Association of Warfare Exposure and Military Sexual Trauma and Perinatal Outcomes



Adjusted for age at each pregnancy, minority status, childhood trauma exposure, and deployment status

Nilni et al., 2021

MST and Perinatal Depression and Suicidality Among Women Veterans



How do the mental health consequences of trauma impact perinatal outcomes?

The Impact of PTSD and Moral Injury on Women Veterans' Perinatal Outcomes Following Separation From Military Service

Nilini, Shayani, Finley, Copeland, Perkins, & Vogt (2020)
Journal of Traumatic Stress

The Veteran Metrics Initiative (TVMI)

- Nationwide prospective cohort study
- N = 9,566
 - 18% women
- Surveyed Veterans within 90 days from separation from active-duty service and followed every 6 months for 3 years (6 surveys)
- Assessment of:
 - PTSD symptoms
 - moral injury symptoms – distress associated with perpetrating, failing to prevent, or witnessing events that contradict deeply held moral beliefs and expectations
 - trauma history
 - perinatal outcomes

PIs: Dawne Vogt, Daniel Perkins, Laurel Copeland, Erin Finley

Impact of PTSD and Moral Injury on Adverse Perinatal Outcomes

9,566 Veterans



1,743 women Veterans



318 became pregnant

Demographics of Women Who Became Pregnant Following Separation in TVMI

Race and Ethnicity

- 76% White
- 15% Hispanic
- 17% Black
- 2% Asian
- 13% Other/Multiracial

- 62% Non-Hispanic White

Age

- 27.99 (5.27)

Education

- 15% High School
- 48% Vocational/Associate's Degree/Some college
- 19% Bachelor's Degree
- 18% Advanced Degree

Annual Household Income

- 14% < \$15,000
- 23% \$15,000 - \$35,000
- 24% \$35,000 - \$55,000
- 13% \$55,000 - \$75,000
- 11% \$75,000 - \$100,000
- 13% > \$100,000

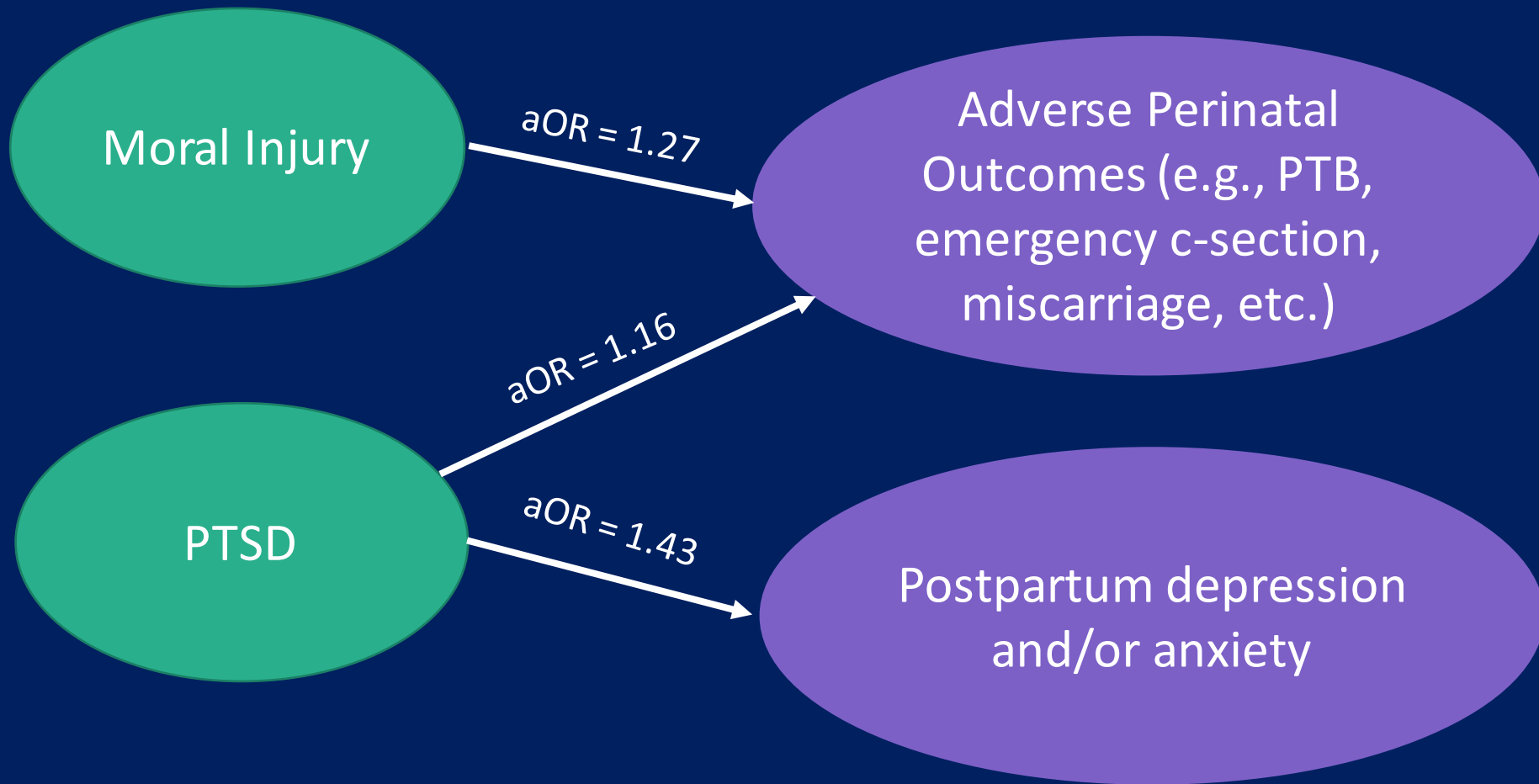
Relationship Status

- 72% married

Branch of Service

- 33% Army
- 23% Navy
- 23% Air Force
- 10% Marine Corps
- 11% National Guard/Reservists

Impact of PTSD and Moral Injury on Adverse Perinatal Outcomes



Adjusted for age, minority status, SES, and lifetime trauma exposure

Nillni et al., 2020

**Current
PTSD**

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graph TD; A[Current PTSD] --> B[Preterm birth, low infant birthweight, gestational diabetes, and preeclampsia];
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**Preterm birth, low infant
birthweight, gestational
diabetes, and preeclampsia**

Life Experiences and Pregnancy Research Study (LEAPS)

- Prospective study of pregnant women receiving prenatal care in a large safety net hospital
- N = 161
- Followed through early pregnancy into the early postpartum period
- Regular collection of psychosocial measures, blood samples, medical chart data, and postpartum qualitative interviews

Study Population

- Women (aged 18 or older) receiving prenatal care at Boston Medical Center (BMC)



33 Trauma-exposed with a diagnosis of full or subthreshold PTSD (PTSD)



41 Trauma-exposed with another mental health disorder (Trauma MH)



61 Trauma-exposed healthy (Trauma Healthy)



30 Non trauma-exposed healthy (Healthy)

Study Design



Can enter the study
up to GA 28



Study
participation
between 18 and
37 weeks

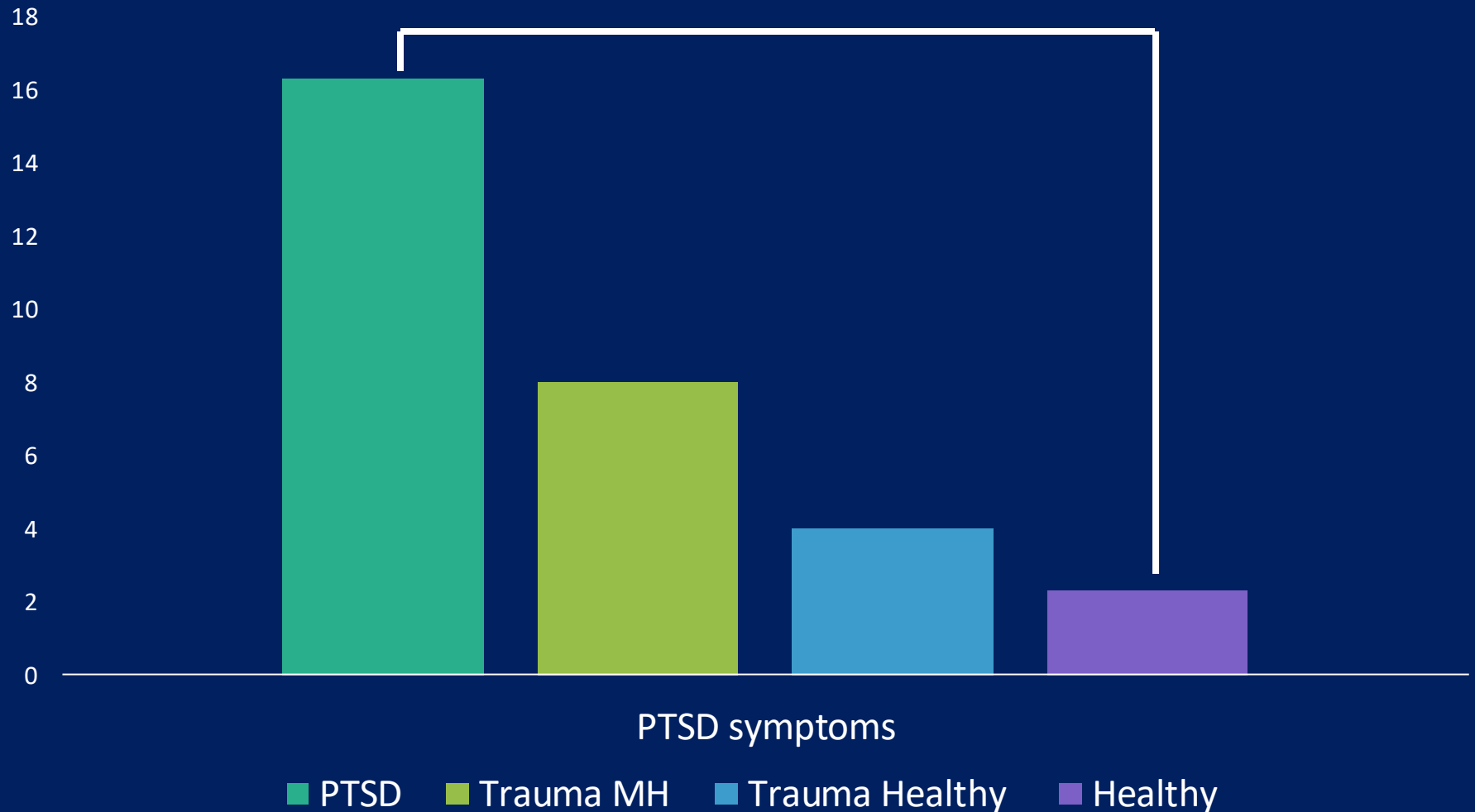
Demographic Characteristics

	Total Sample (N = 161)	PTSD (N = 33)	Trauma MH (N = 41)	Trauma Healthy (N = 61)	Healthy (N = 26)
Age (mean, SD)	30.5 (6.2)	28.8 (4.0)	29.2 (8.2)	31.8 (5.4)	31.9 (5.8)
Race/Ethnicity					
Non-Hispanic White	59 (36.6%)	12 (36.4%)	16 (39.0%)	25 (41.0%)	6 (23.1%)
Hispanic White	8 (5.0%)	1 (3.0%)	1 (2.4%)	4 (6.6%)	2 (7.7%)
Non-Hispanic Black	47 (29.2%)	13 (39.4%)	13 (31.7%)	15 (24.6%)	6 (23.1%)
Hispanic Black	7 (4.3%)	2 (6.1%)	3 (7.3%)	2 (3.3%)	0 (0.0%)
Asian	11 (6.8%)	0 (0.0%)	0 (0.0%)	5 (8.2%)	6 (23.1%)
Other/Multiracial	29 (18.0%)	5 (15.2%)	8 (19.5%)	10 (16.4%)	6 (23.1%)
Household income below 25k	63 (39.1%)	23 (69.7%)	19 (46.3)	13 (22.0%)	8 (30.8%)
Education					
No high school or GED	19 (11.8%)	5 (15.2%)	8 (19.5%)	4 (6.6%)	2 (7.7%)
High School	26 (16.1%)	8 (24.2%)	5 (12.2%)	9 (14.8%)	4 (15.4%)
Some college/associates/vocational	51 (31.7%)	16 (48.5%)	15 (36.6%)	15 (24.6)	5 (19.2%)
Bachelor's degree or higher	65 (40.4%)	4 (12.1%)	13 (31.7%)	33 (54.1%)	15 (57.7%)
Relationship Status					
Married or cohabitating	108 (67.1%)	12 (36.4%)	25 (61.0%)	50 (82.0%)	21 (80.8%)
In a relationship but living separately	29 (18.0%)	12 (36.4%)	7 (17.1%)	8 (13.1%)	2 (7.7%)
Single	24 (14.9%)	9 (27.3%)	9 (22.0%)	3 (4.9%)	3 (11.5%)

Clinical Characteristics

	Total Sample (N = 161)	PTSD (N = 33)	Trauma MH (N = 41)	Trauma Healthy (N = 61)	Healthy (N = 26)
Parity	81 (50.3%)	21 (63.6%)	13 (31.7%)	30 (50.8%)	16 (61.5%)
Psychotropic medication use during pregnancy (e.g., Zoloft)	22 (13.7%)	10 (30.3%)	9 (21.9%)	3 (4.9%)	0 (0.0%)
Medication assisted therapy during pregnancy (e.g., suboxone)	15 (9.3%)	7 (21.2%)	5 (12.2%)	3 (4.9%)	0 (0.0%)
Cigarette or tobacco use during pregnancy	19 (11.8%)	9 (27.3%)	9 (21.9%)	1 (1.6%)	0 (0.0%)
Marijuana use during pregnancy	21 (13.0%)	8 (24.2%)	10 (24.4%)	3 (4.9%)	0 (0.0%)
Alcohol use during pregnancy	16 (9.9%)	3 (9.1%)	5 (12.2%)	7 (11.5%)	1 (3.8%)
Other substance use during pregnancy	14 (8.7%)	7 (21.2%)	5 (12.2%)	2 (3.3%)	0 (0.0%)

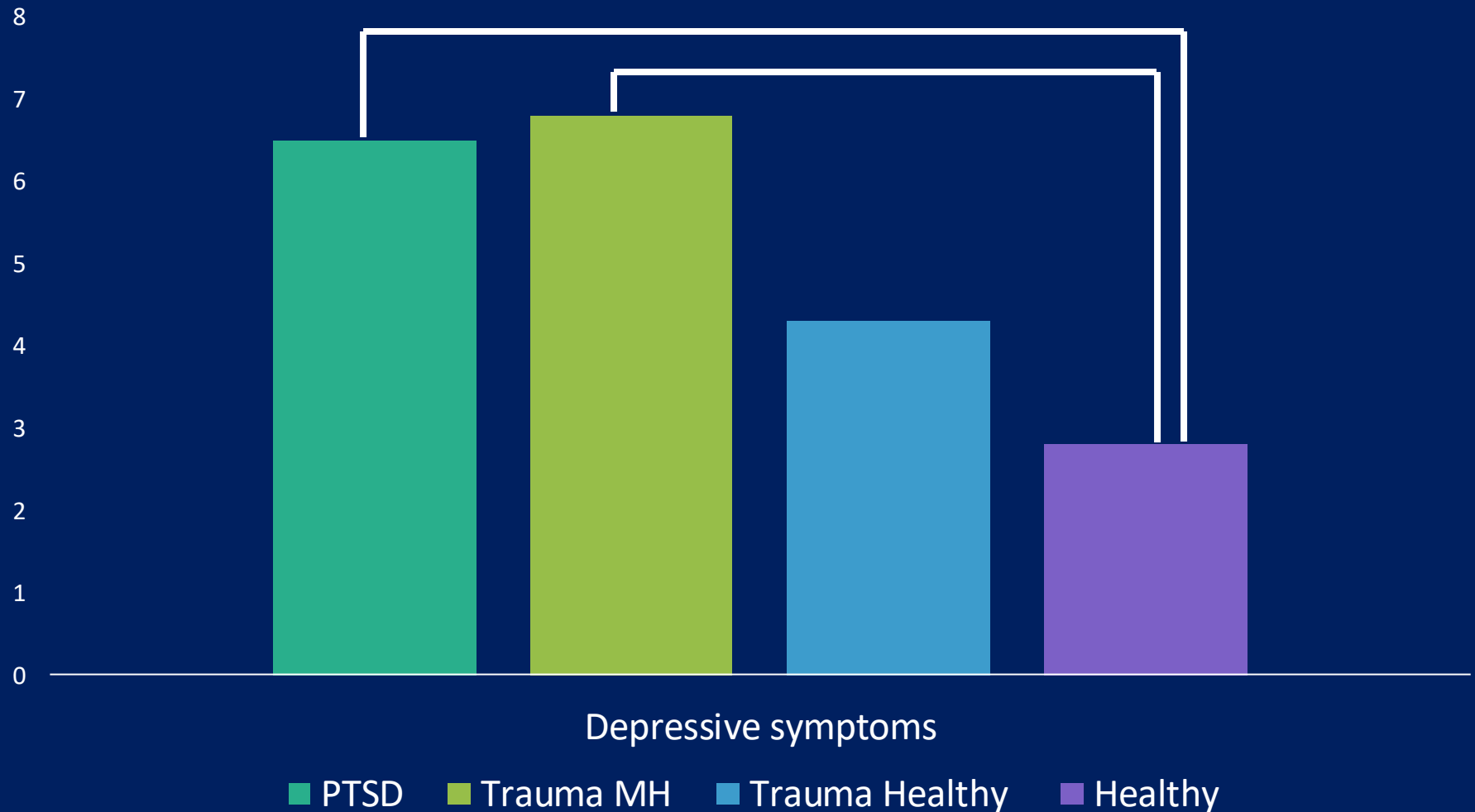
Trauma/Mental Health Group Differences on PTSD Symptoms at 5-7 Weeks Postpartum



Preliminary unpublished data

Adjusted for income, race/ethnicity, and age

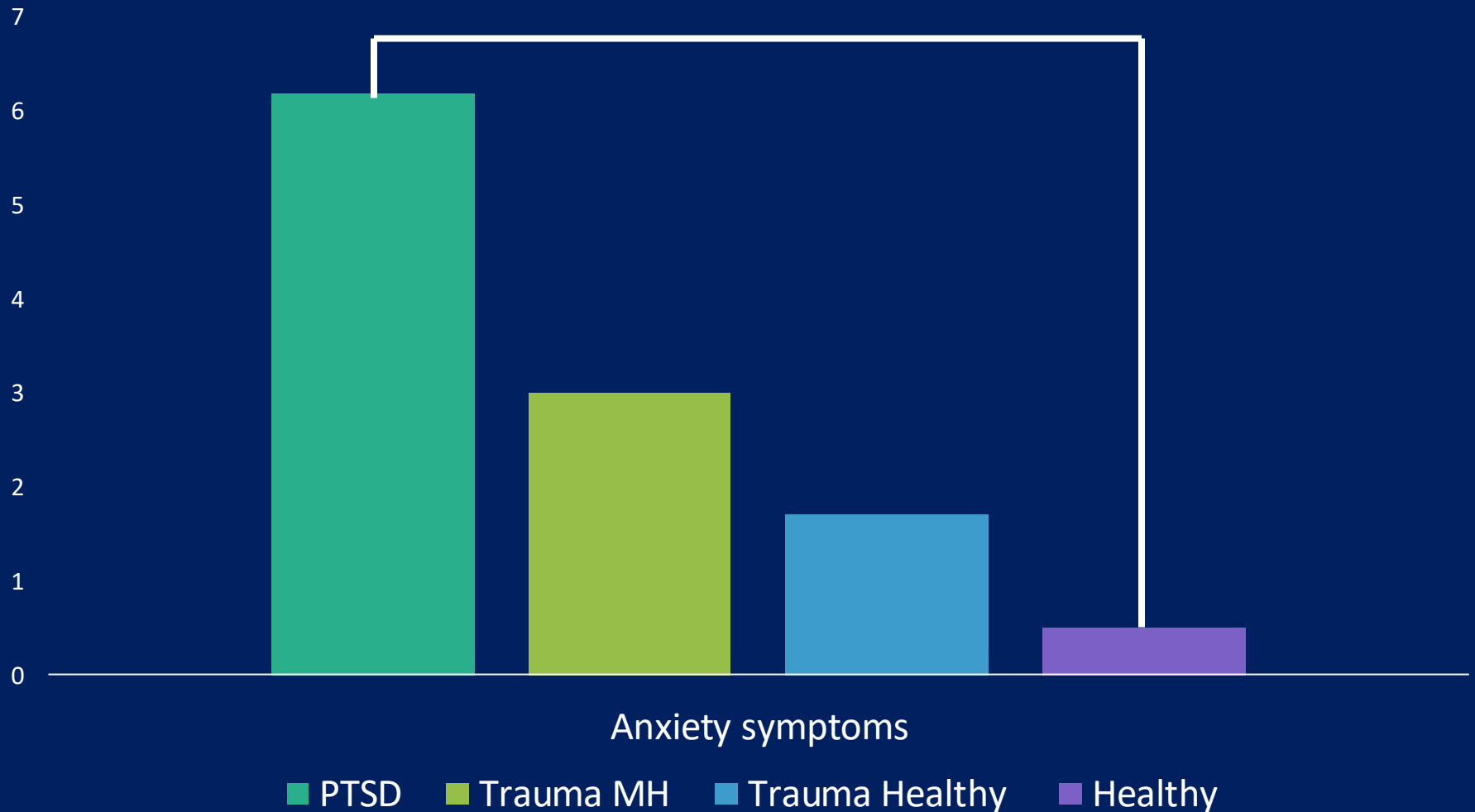
Trauma/Mental Health Group Differences on Depressive Symptoms at 5-7 Weeks Postpartum



Preliminary unpublished data

Adjusted for income, race/ethnicity, and age

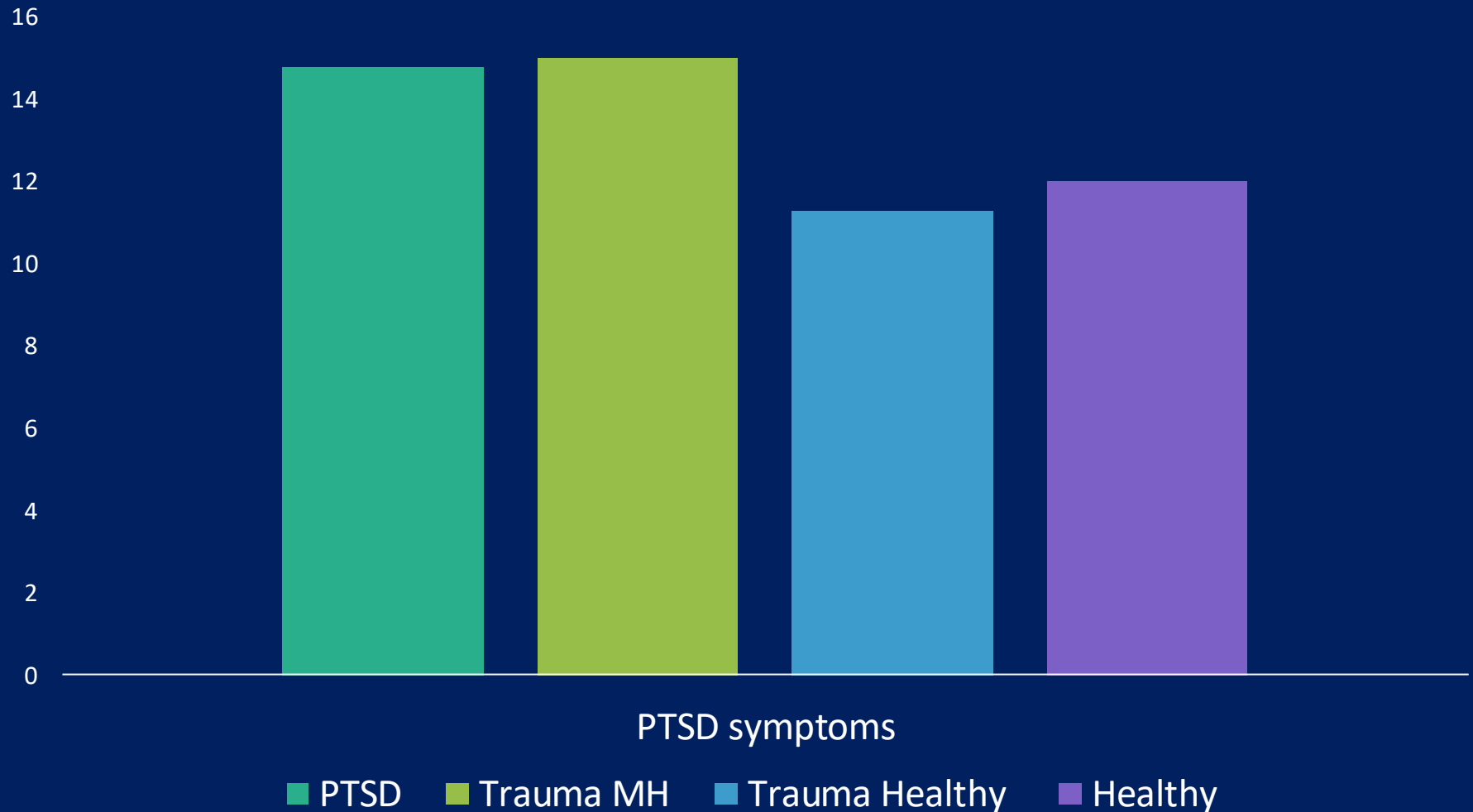
Trauma/Mental Health Group Differences on Anxiety Symptoms at 5-7 Weeks Postpartum



Preliminary unpublished data

Adjusted for income, race/ethnicity, and age

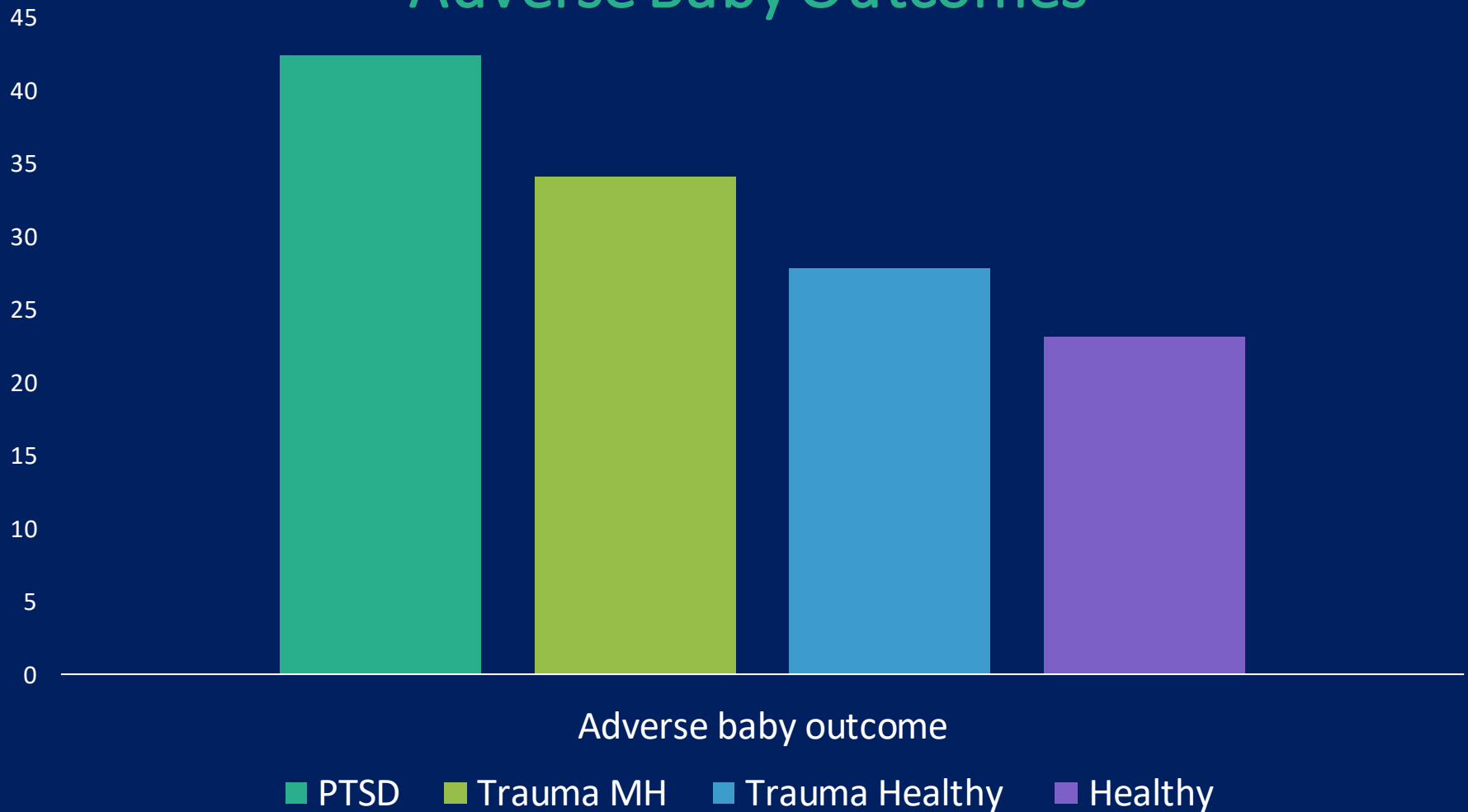
Trauma/Mental Health Group Differences on Perceived Stress Symptoms at 5-7 Weeks Postpartum



Preliminary unpublished data

Adjusted for income, race/ethnicity, and age

Trauma/Mental Health Group Differences on Adverse Baby Outcomes

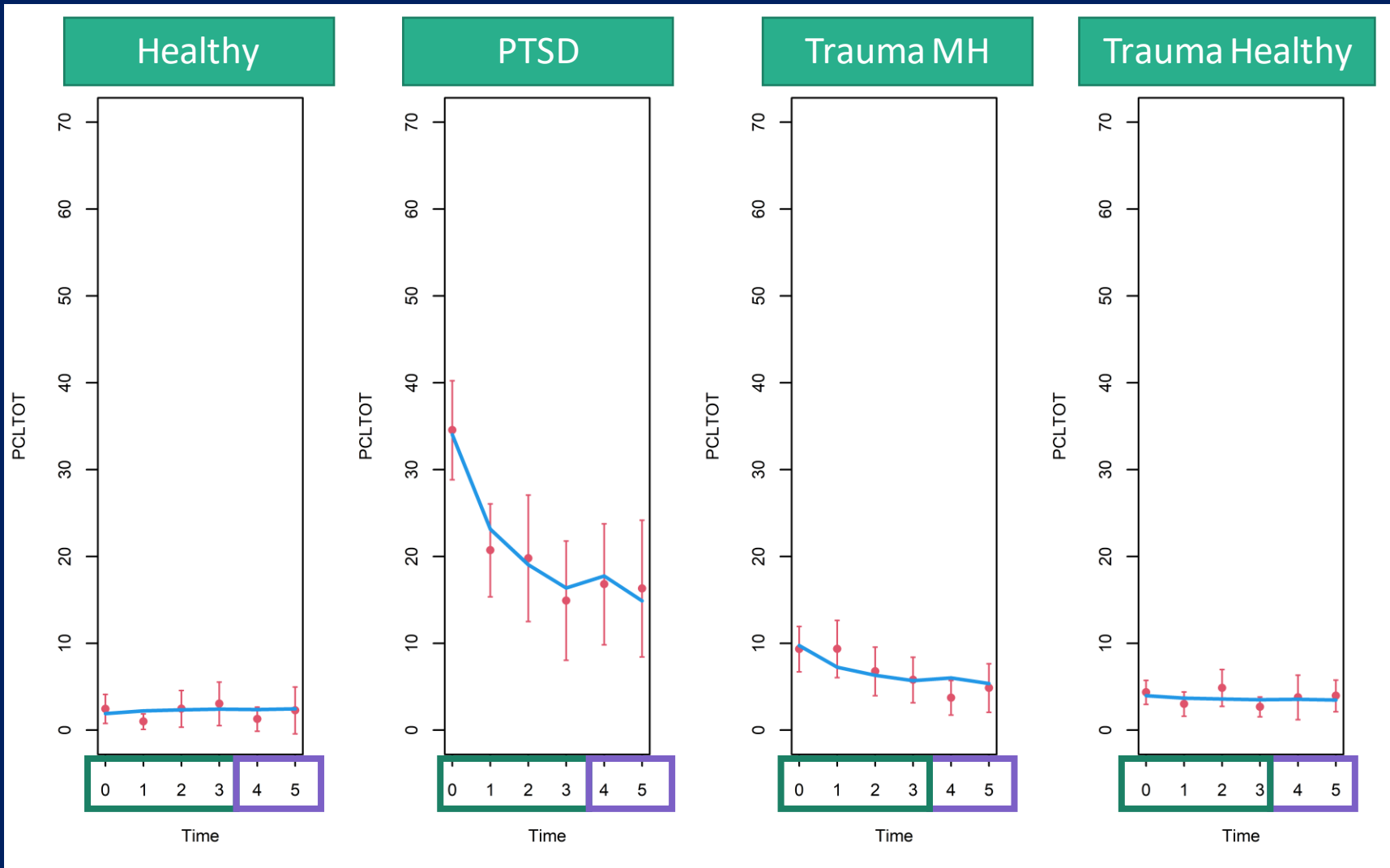


Adverse birth outcome: intrauterine growth restriction, preterm delivery (< 37 weeks gestational age), baby admitted to NICU, low infant birthweight (< 2500 grams)

Preliminary unpublished data

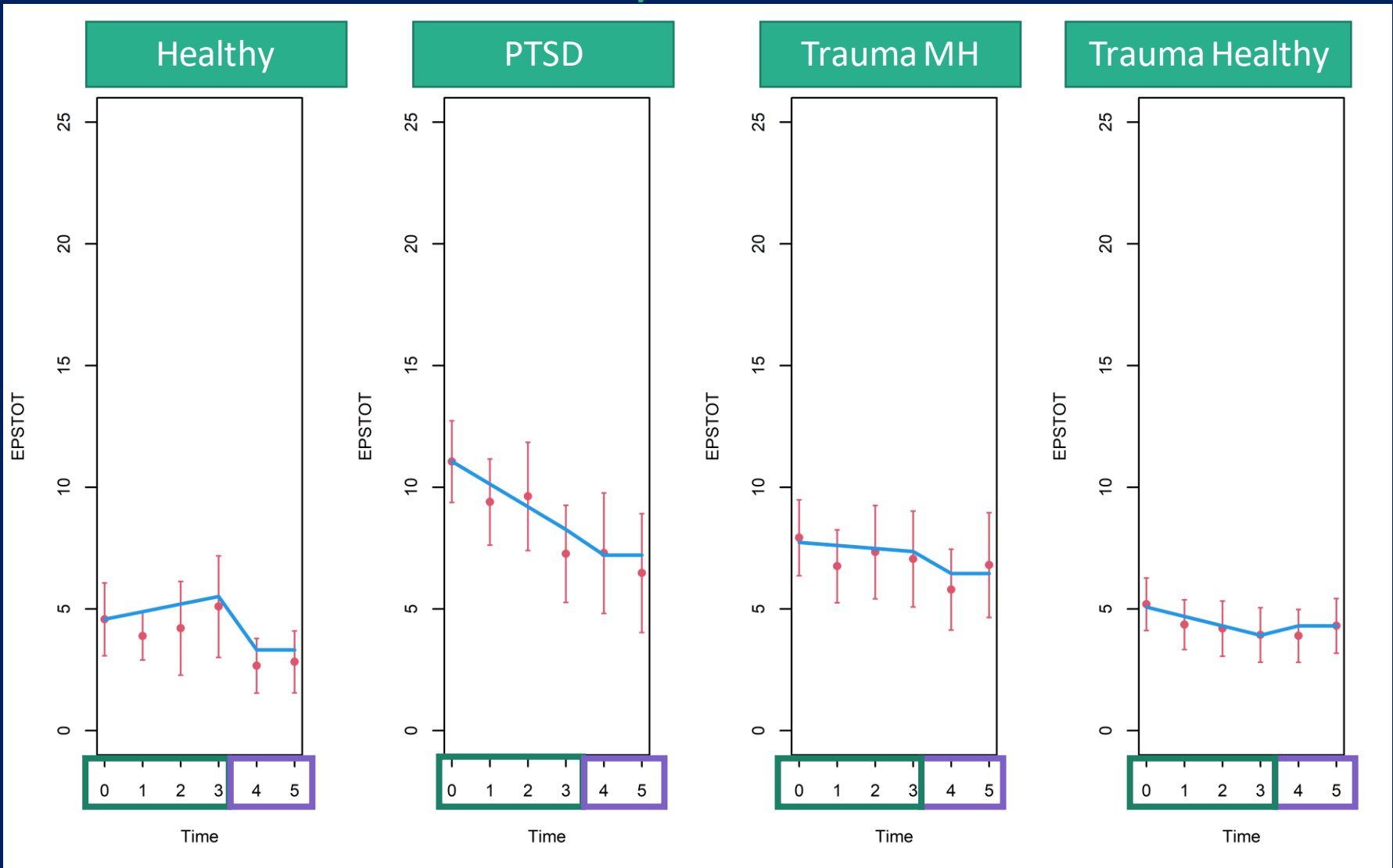
Adjusted for income, race/ethnicity, and age

Trauma/Mental Health Group Differences in Trajectories of PTSD



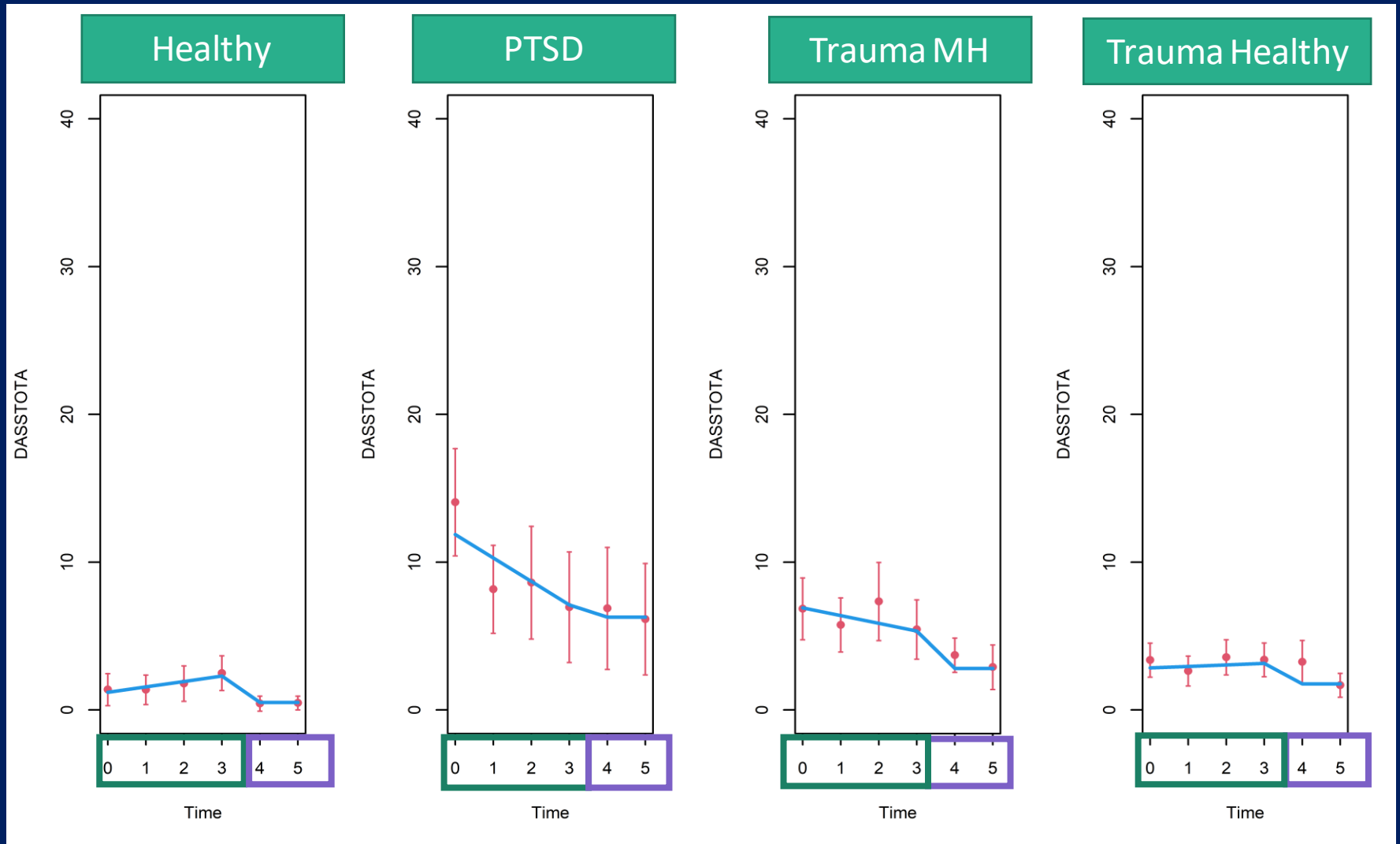
Preliminary unpublished data

Trauma/Mental Health Group Differences in Trajectories of Depression



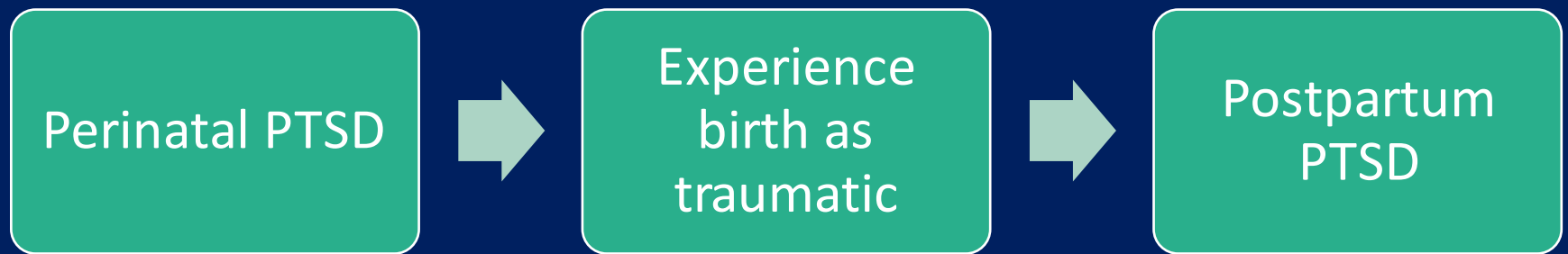
Preliminary unpublished data

Trauma/Mental Health Group Differences in Trajectories of Anxiety

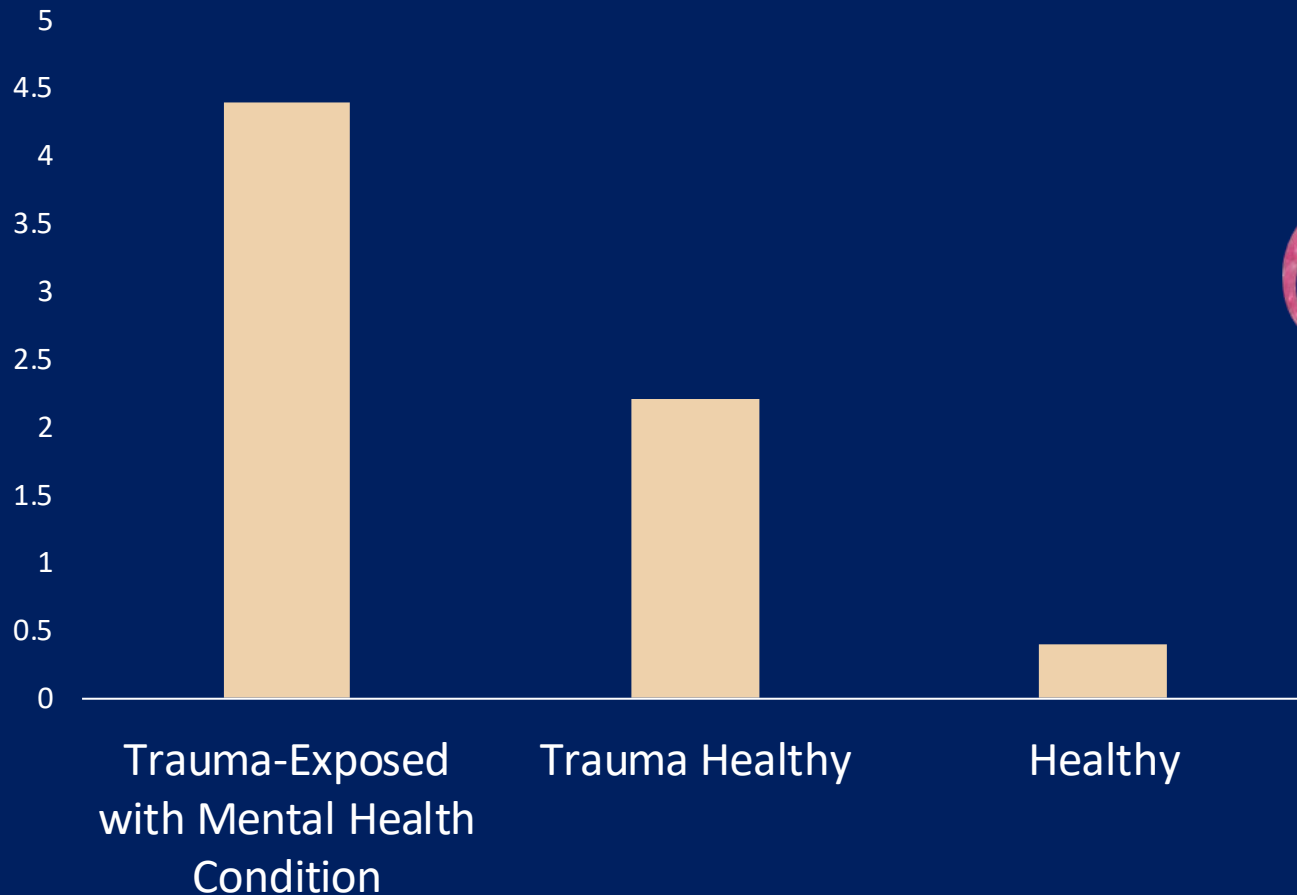


Preliminary unpublished data

How do trauma-exposed women
with PTSD and other mental
health conditions experience
pregnancy and labor and
delivery?

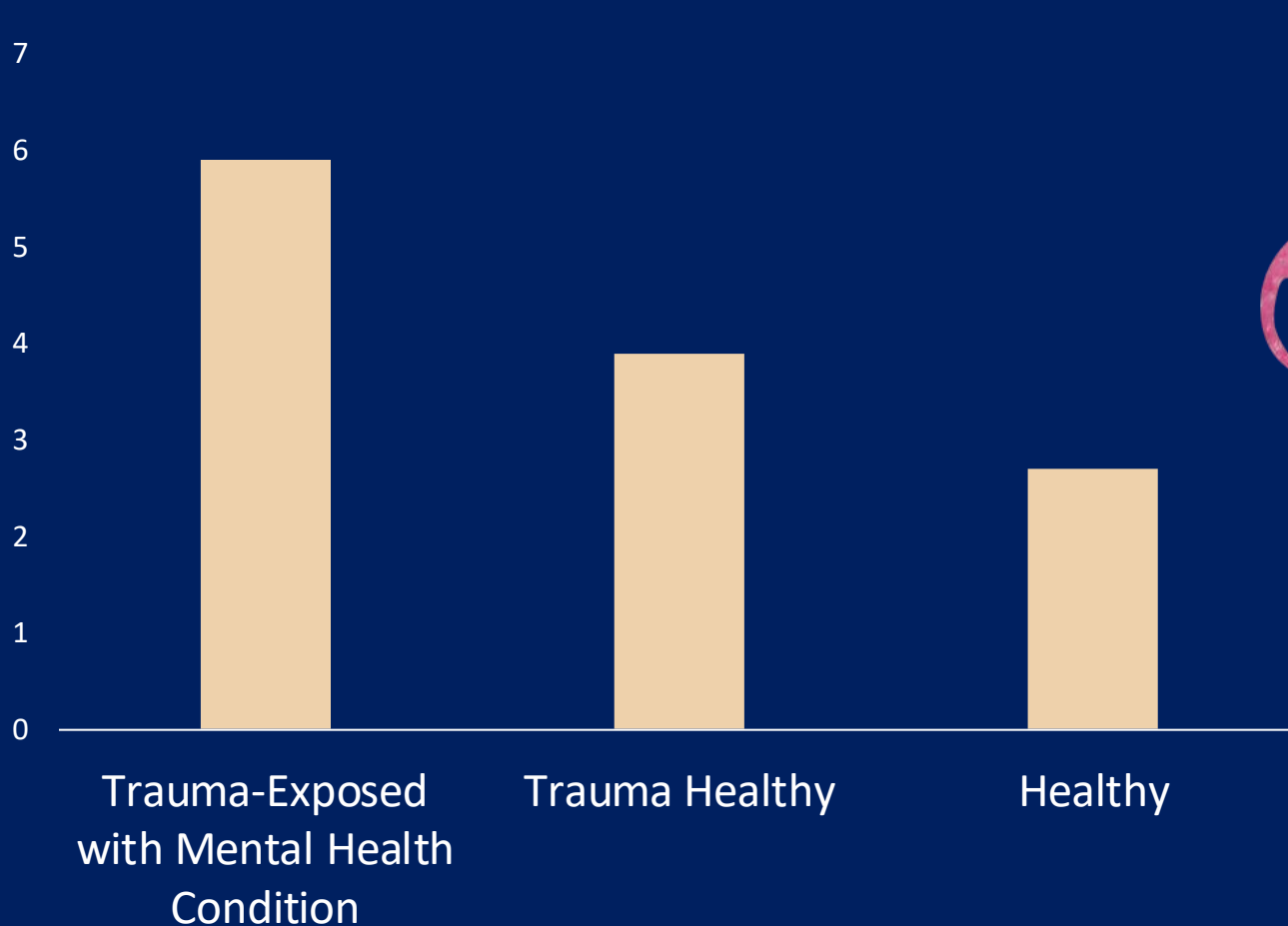


Reported Feeling Isolated During Labor and Delivery (L&D)



Preliminary unpublished data

Reported Perceiving L&D as Dangerous and Feared Infant Death/Injury During L&D



Preliminary unpublished data


Qualitative Experience of Labor & Delivery for Women with PTSD

“I just felt like I was alone. Like I felt like everyone was moving so slow. Like they wasn’t checking on me as much as they should have been checking on me. Because I was in there with no pain medication, you know what I mean, my first baby. Contractions on top of each other. I feel like I was the only one that was trying to make myself feel better. No one else was giving me any tools or tips or you know how to lay or how to breath. I was just kind of left alone.”

“Labor was scary”

Summary

- Trauma exposure and/or current PTSD symptoms is associated with negative perinatal outcomes
 - These associations are consistent in Veteran samples
- Current PTSD and other mental health conditions increase perceived danger and fear during labor and delivery

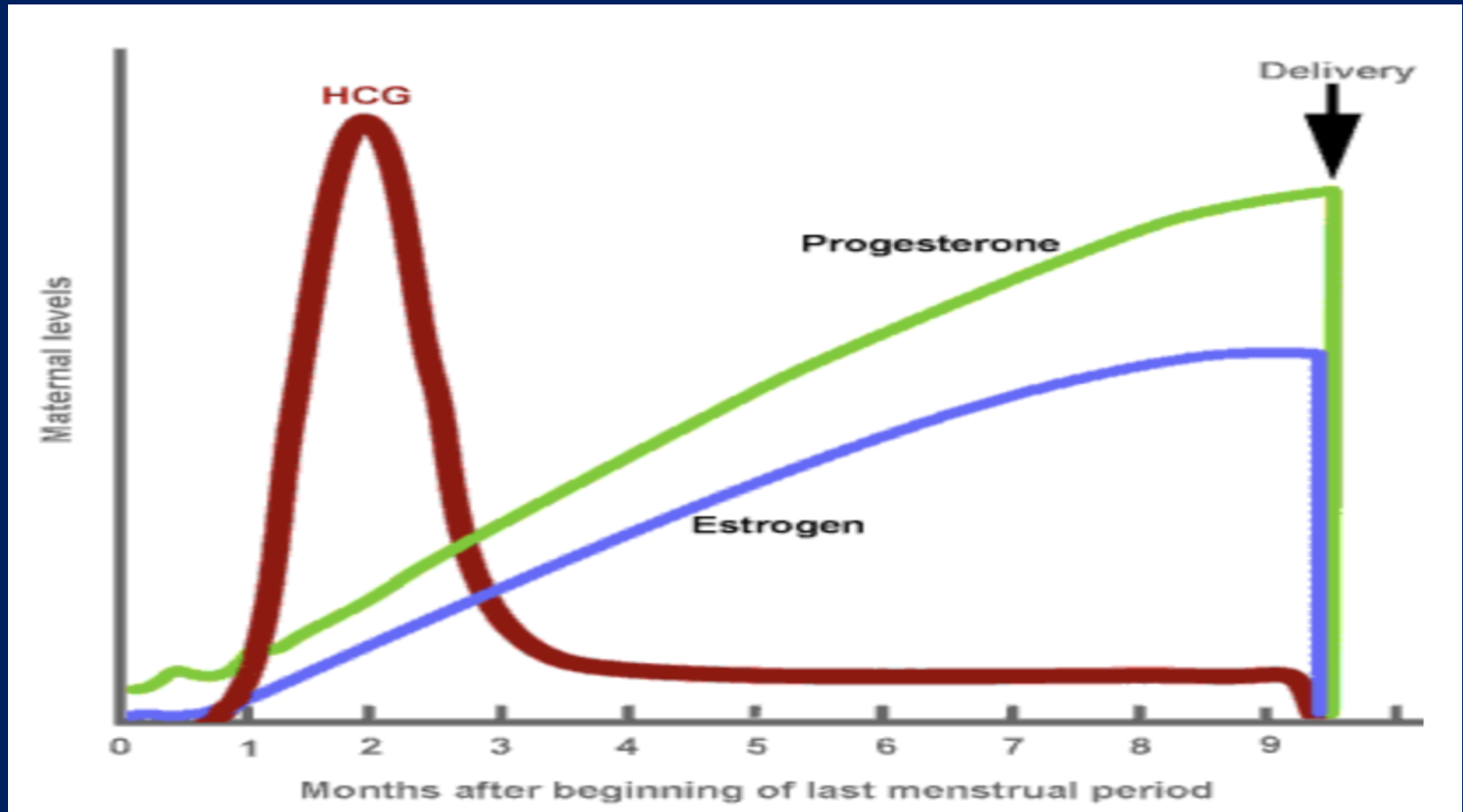


What is the mechanism
linking trauma and/or
PTSD to negative
pregnancy-related
outcomes?

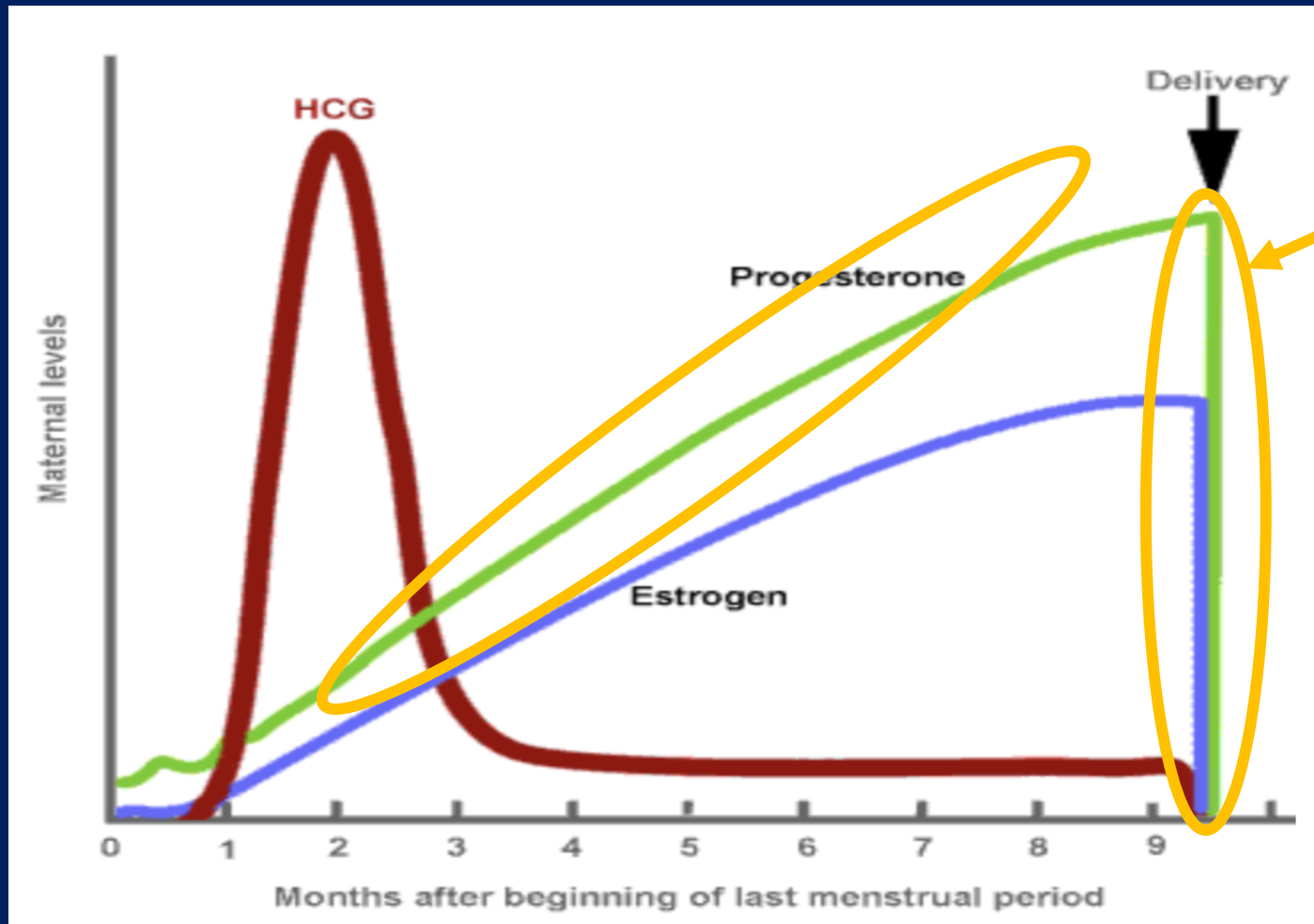
Potential Mechanisms

- HPA axis dysregulation
- Inflammation
- Behavioral changes (e.g., increased substance use)

Role of Hormones During Pregnancy and Postpartum



Role of Hormones During Pregnancy and Postpartum



ALLO

Allopregnanolone/Pregnanolone (ALLO)

- ALLO is a neuroactive metabolite of progesterone
- Progesterone → 5 α DHP → ALLO
- Positively modulates GABA_A receptors
- Broad Impact
 - Anxiolytic
 - Antidepressant
 - Anticonflict
 - Neuroprotective and neurogenerative
 - Reduces pain

What do we know about ALLO and PTSD?



- Stress exposure and social isolation reduce ALLO levels in animal models of PTSD

Dong et al., 2001; Zhang et al., 2014



What do we know about ALLO and PTSD?

- Block in conversion of ALLO from 5alphaDHP observed among women with PTSD as compared to trauma-exposed healthy women

Rasmusson et al., 2006; Pineles et al., 2018

ALLO as a potential mechanism for preterm birth?

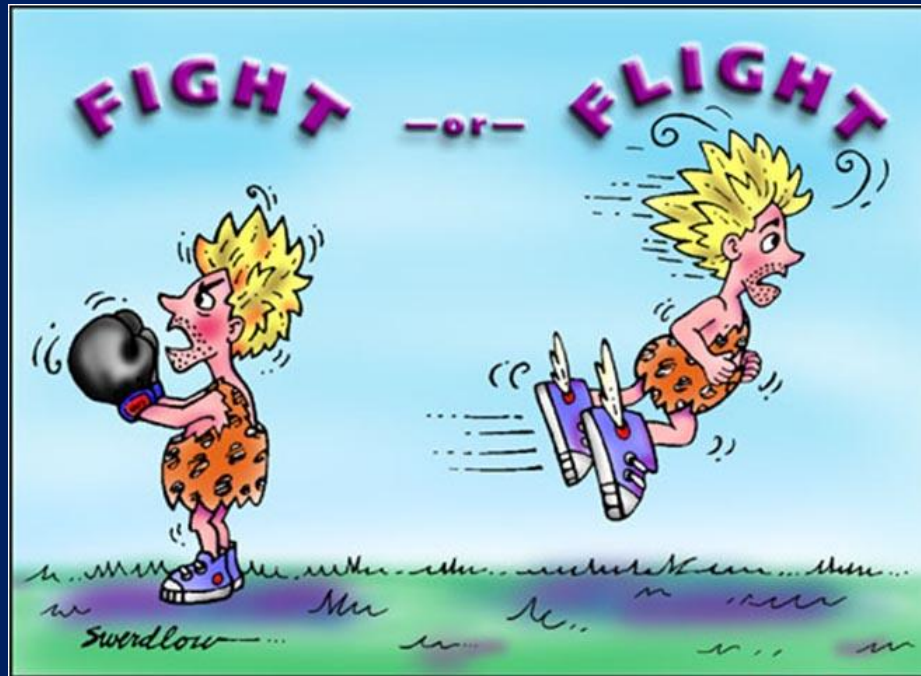
- Blocking ALLO production with finasteride in rats during the final days of pregnancy reduced gestational length



ALLO may impact preterm
birth via multiple
pathways



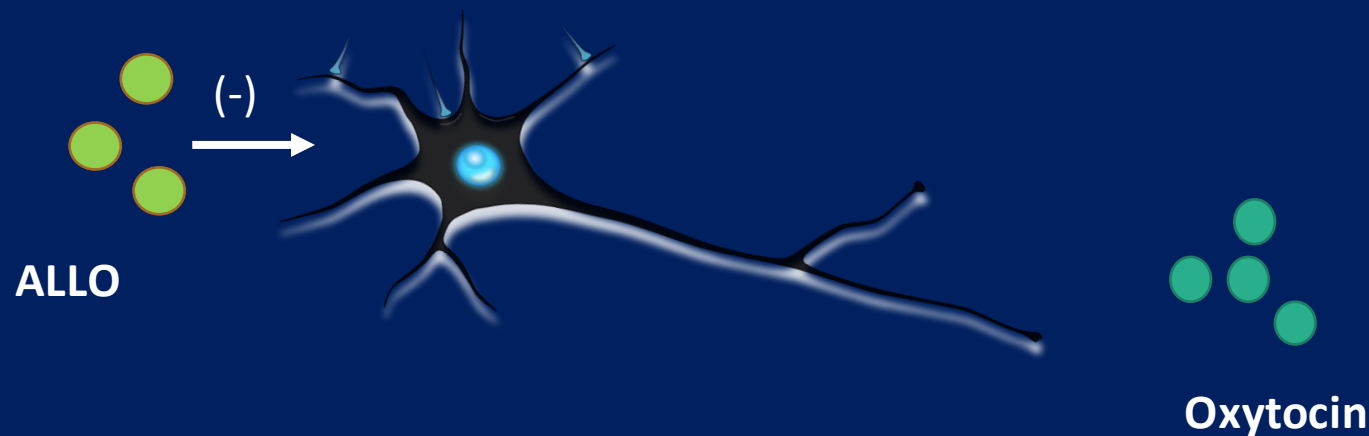
ALLO may impact preterm birth via multiple pathways



- ALLO decreases expression of HPA-axis and the stress response system in late pregnancy
- HPA-axis related hormones (e.g., CRH) are elevated in women who deliver preterm babies

ALLO may impact preterm birth via multiple pathways

- ALLO reduces inflammation
- ALLO restrains the release of oxytocin



The role of ALLO in perinatal depression and stress (and PTSD?)

- Low levels of ALLO in late pregnancy and the postpartum period correlate with increased depressive symptoms and stress reactivity



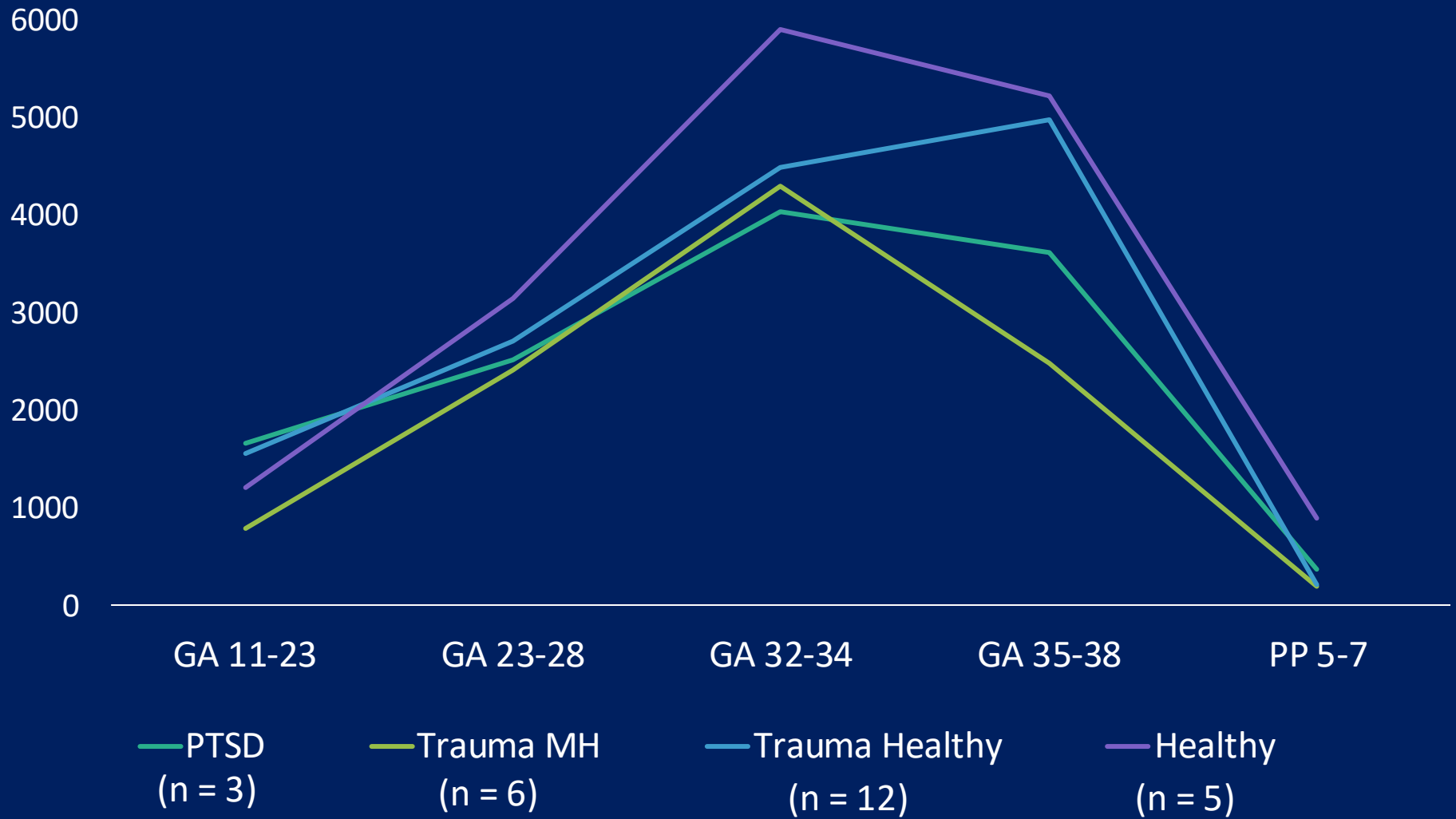
PTSD

ALLO
Deficit

Negative
Pregnancy
Outcomes

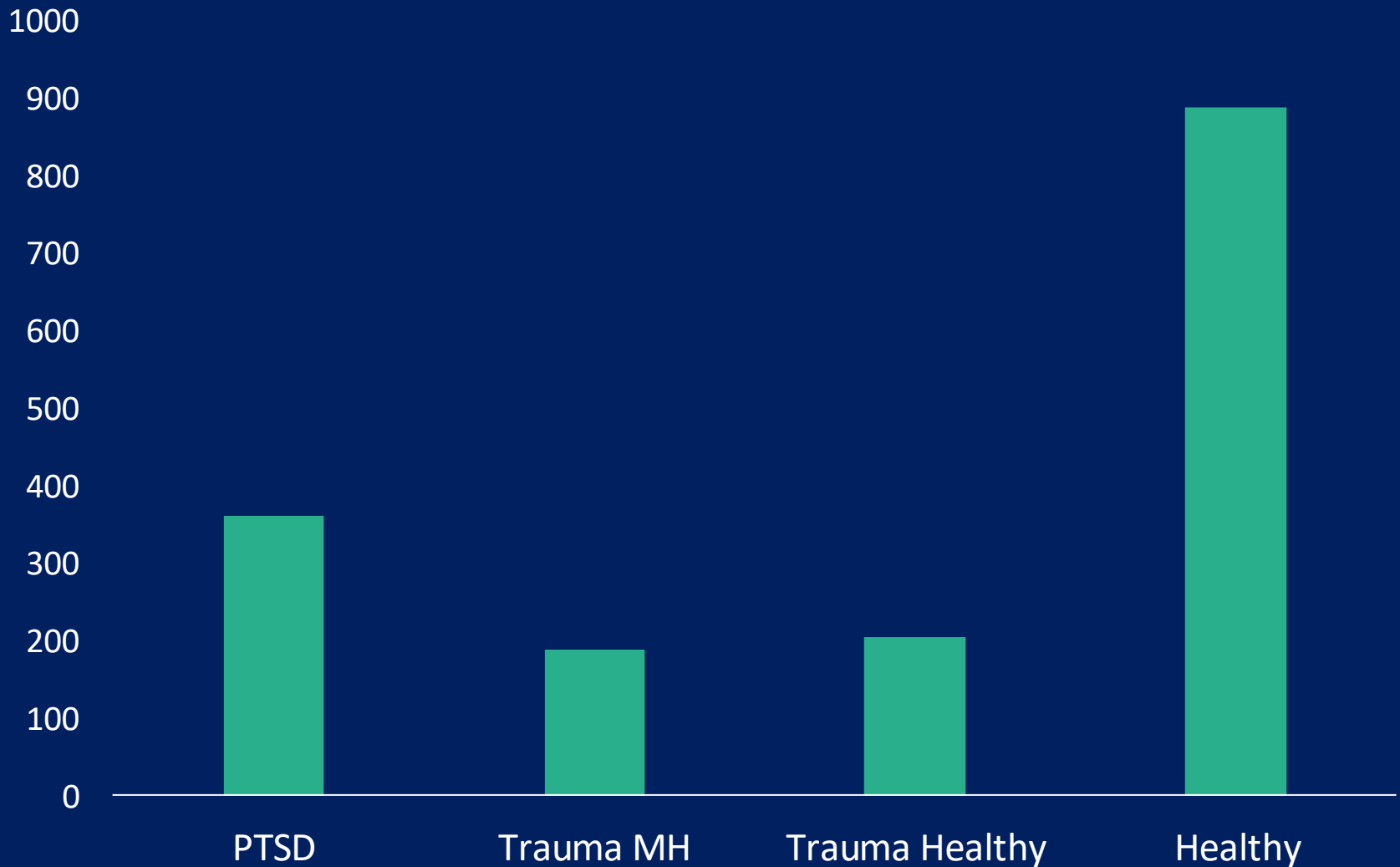
ALLO Levels by Group (N = 26)

ALLO Levels by Group (N = 26)



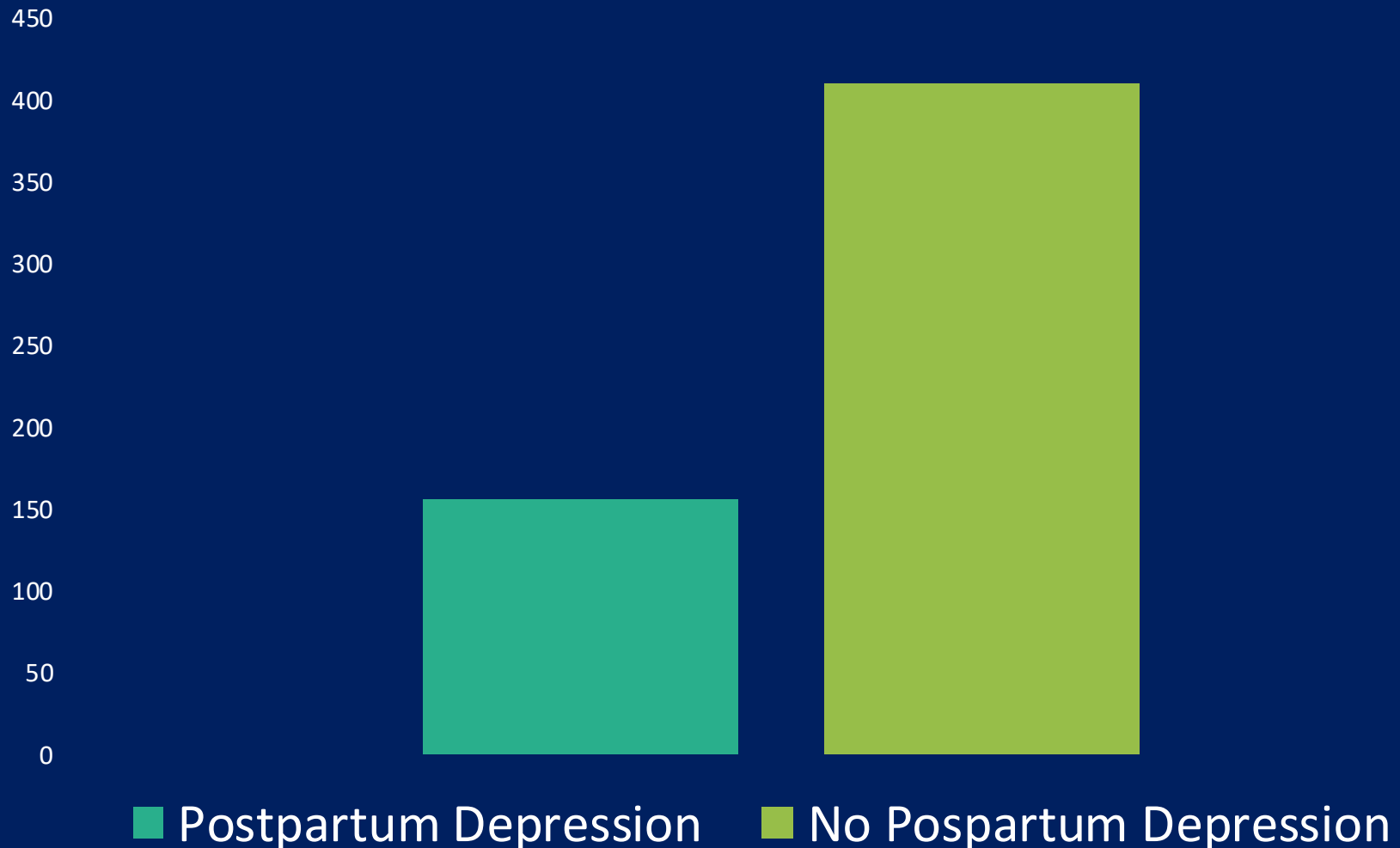
Preliminary unpublished data

ALLO Levels by Group Postpartum (N = 26)



Preliminary unpublished data

ALLO Levels for Those Meeting Postpartum Depression Cut-off



Preliminary unpublished data


Treatment for Perinatal PTSD



Psychopharmacological Interventions

Medication	Perinatal considerations
Sertraline (SSRI)	<ul style="list-style-type: none">• FDA approved for PTSD; recommended by VA/DoD guidelines• Well studied; favorable safety profile in pregnancy and breastfeeding
Paroxetine (SSRI)	<ul style="list-style-type: none">• FDA-approved for PTSD; recommended by VA/DoD guidelines• Well studied; possible increased risk of cardiovascular malformation (inconsistent across studies, best methodology shows no increased risk)• Possible increased neonatal discontinuation side effects
Fluoxetine (SSRI)	<ul style="list-style-type: none">• Not FDA-approved for PTSD; recommended by VA/DoD guidelines• Well studied; favorable safety profile in pregnancy• Side effects in some breastfeeding babies
Venlafaxine (SSNRI)	<ul style="list-style-type: none">• Not FDA-approved for PTSD; recommended by VA/DoD guidelines• Reasonably well studied (less than the other three)• Favorable safety profile in pregnancy and breastfeeding

It's difficult to disentangle
the effects of mental health
symptoms and psychotropic
medication exposure on
fetus



Risk of
untreated
PTSD
during
pregnancy

Risk of
SSRIs
during
pregnancy

ALLO and Postpartum Depression (and maybe PTSD?)

- Low levels of ALLO in late pregnancy and the postpartum period correlate with increased depressive symptoms and stress reactivity



Zulpresso (Brexanolone) for postpartum depression

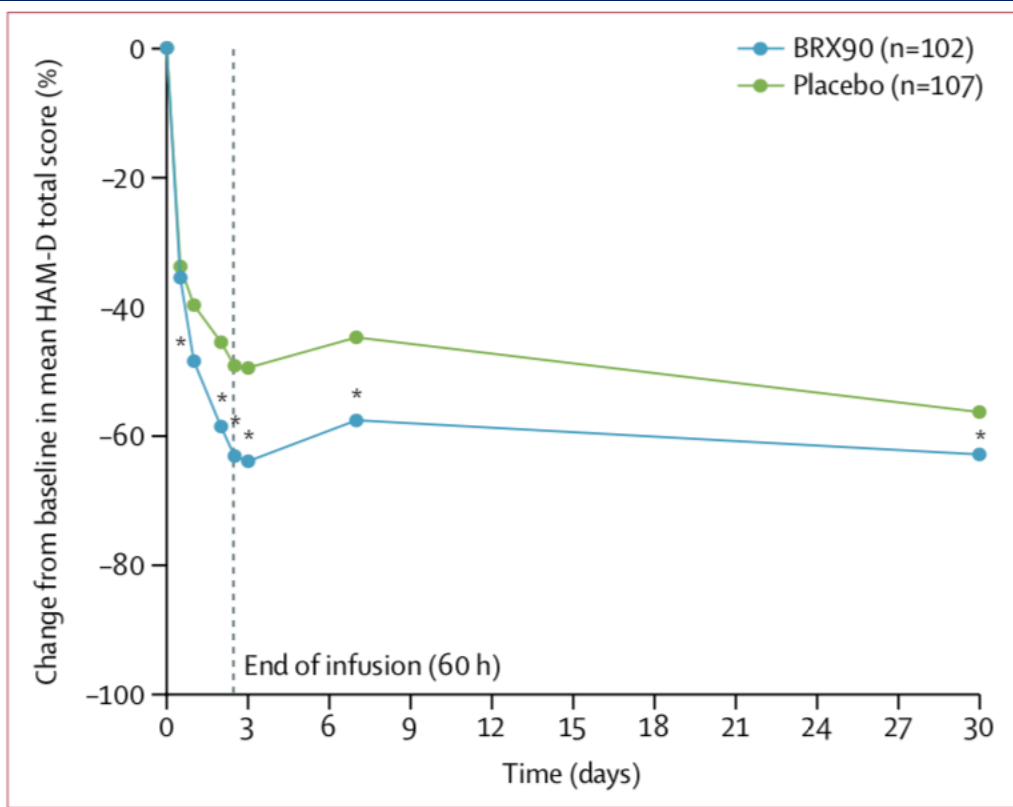


Figure 3: Percentage change from baseline in mean HAM-D total score in the integrated BRX90 study population

p values were calculated by two-sided t test. BRX90=brexanolone injection 90 µg/kg. *p<0.05 vs placebo.

- 60 hour Brexanolone intravenous infusion vs. placebo for women with moderate to severe PPD
 - Intravenous formulation of ALLO

First Drug for Postpartum Depression Released by the FDA March 2019

PHARMACEUTICAL NEWS



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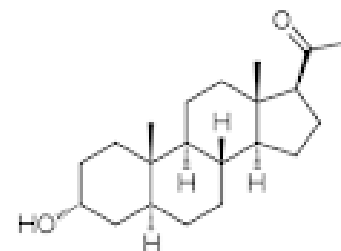
ZULRESSO (BREXANOLONE) IS THE FIRST DRUG APPROVED BY THE FDA SPECIFICALLY FOR POSTPARTUM DEPRESSION (PPD)



Zulresso

What is Zulresso?

Zulresso (brexanolone) is a gamma-aminobutyric acid A (GABAA) receptor positive allosteric modulator indicated for the treatment of postpartum depression (PPD).



Brexanolone

1-(3-Hydroxy-10,13-dimethyl-2,3,4,5,6,7,8,9,11,12,14,15,16,17-tetradecahydro-1H-cyclopenta[a]phenanthren-17-yl)ethanone

Psychosocial Interventions for Perinatal PTSD

- Very limited research in this area
- Any evidence-based treatment for PTSD!
 - Cognitive Processing Therapy
 - Prolonged Exposure
 - Written Exposure Therapy

Managing Antepartum PTSD Study (MAPS)

- Open trial pilot study examining acceptability, feasibility, and preliminary effectiveness of Written Exposure Therapy for treatment of perinatal PTSD during pregnancy
- Delivered in the context of OBGYN care for pregnant women with comorbid PTSD and SUD
- N = 18 enrolled; N = 10 completed WET

Written Exposure Therapy (WET)

- 5 sessions
- As effective as gold standard treatments for PTSD (e.g., Cognitive Processing Therapy) with fewer drop outs
- Low patient and therapist burden
- Session structure
 - Brief check-in
 - 30 minutes of writing the details and/or impact of the trauma (depending on session)
 - 10-15 minute processing of writing with therapist

Demographic Characteristics

	Intent To Treat (N = 18)	Completed WET (N = 10)	Dropped Out (N = 8)
Minority	7 (38.9%)	3 (30%)	4 (50%)
Education			
Some high school, no diploma	5 (27.77%)	3 (30%)	2 (25.00%)
High School	5 (27.77%)	4 (40%)	1 (12.50%)
Some college/associates degree	8 (44.44%)	3 (30%)	5 (62.50%)
Relationship Status			
Single	6 (33.33%)	3 (30%)	3 (37.50%)
In a relationship but living separately	9 (50.0%)	7 (70%)	2 (25%)
Married or cohabitating	3 (16.66%)	0 (0%)	3 (37.50%)
Living Situation			
Rent or own house/apartment	4 (22.22%)	1 (10%)	3 (37.50%)
Live with friend and not paying rent	4 (22.22%)	2 (20%)	2 (25%)
Substance use residential program	10 (55.6%)	7 (70%)	3 (37.50%)
Not Employed	14 (77.77%)	7 (70%)	7 (87.50%)
Household Income			
Less than \$15,000	12 (66.66%)	8 (80%)	4 (50%)
\$15,000 - \$35,000	5 (27.77%)	2 (20%)	3 (37.50%)
\$35,000 - \$45,000	1 (5.55%)	0 (0%)	1 (12.50%)

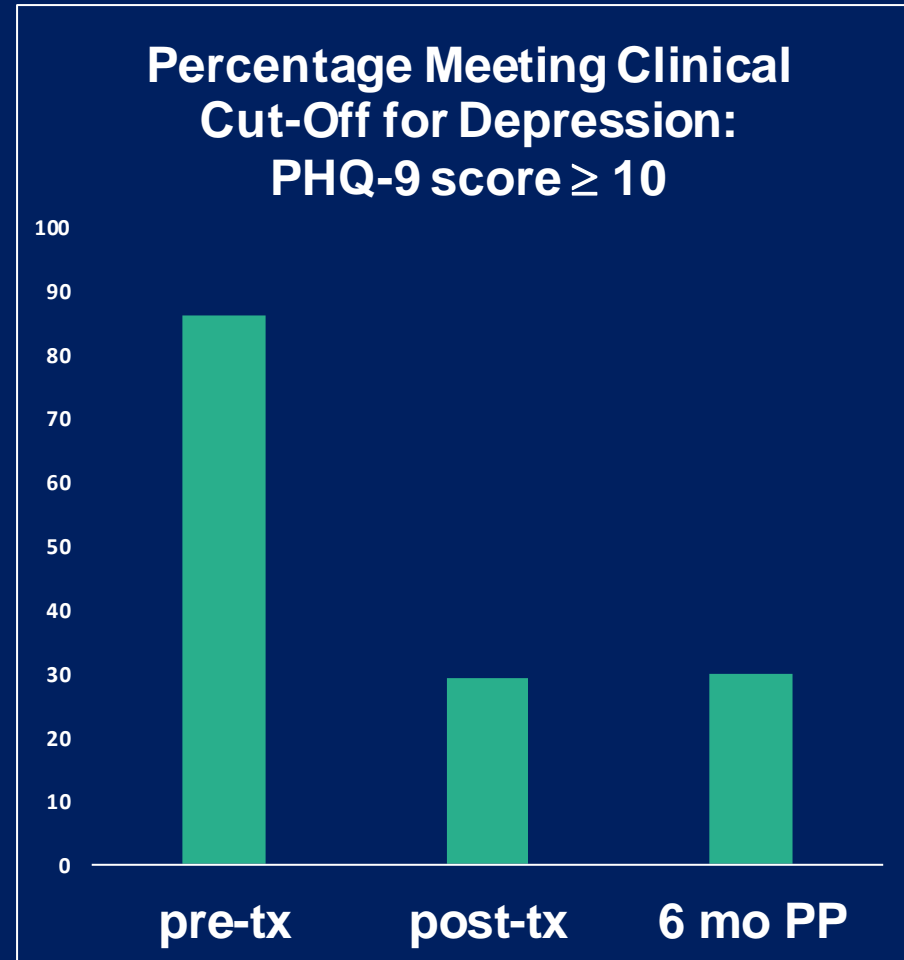
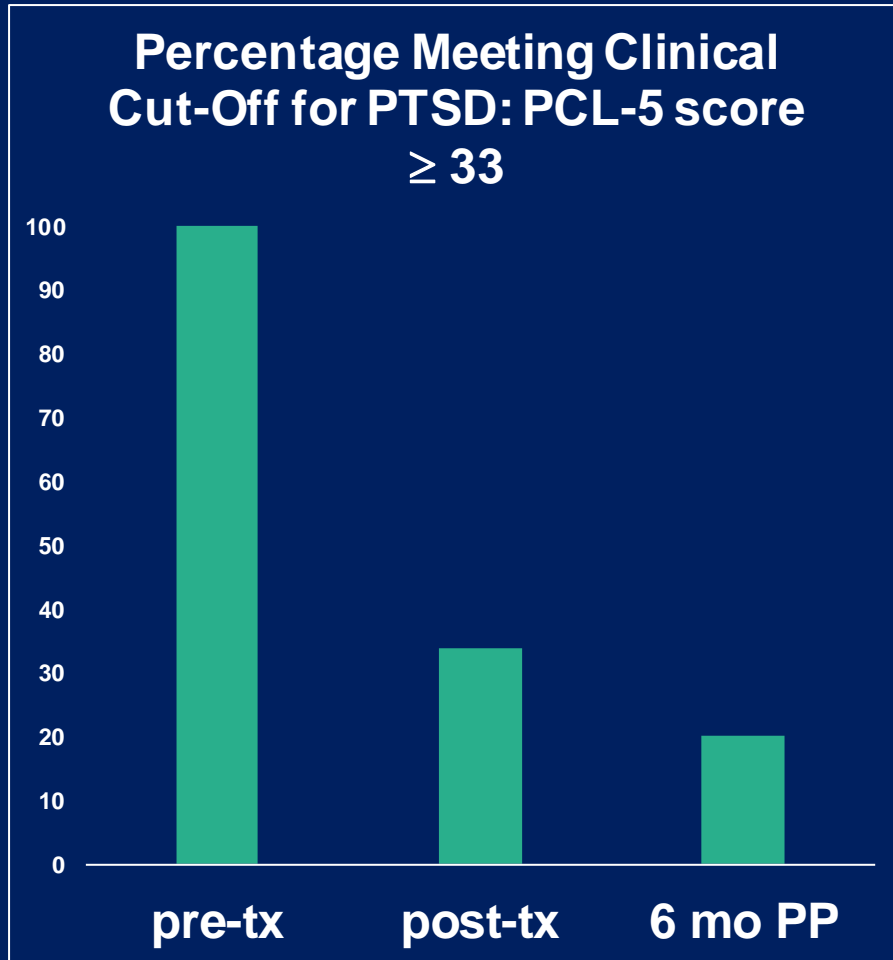
Clinical Characteristics

	Intent To Treat (N = 18)	Completed WET (N = 10)	Dropped Out (N = 8)
	n (%)	n (%)	n (%)
Most Frequent Potentially Traumatic Events (PTE)			
Transportation accident	15 (83.3%)	7 (70.0%)	8 (100.0%)
Physical assault	17 (94.4%)	9 (90.0%)	8 (100.0%)
Assault with a weapon	14 (77.8%)	9 (90.0%)	5 (62.50%)
Sexual assault	15 (83.3%)	9 (90.0%)	6 (75.0%)
Other unwanted sexual experience	16 (88.9%)	9 (90.0%)	7 (87.5%)
Perinatal Outcomes			
Maternal obstetrical medical condition (e.g., hypertension)	9 (50.0%)	7 (70.0%)	2 (25.0%)
Intrauterine growth restriction	7 (38.9%)	4 (40.0%)	3 (37.50%)
Pre-term delivery (GA 37 weeks)	4 (22.22%)	2 (20%)	2 (25.0%)
Stayed engaged in Project RESPECT	15 (83.33%)	9 (90.0%)	6 (75.0%)
Any relapse during study period	8 (44.4%)	5 (50.0%)	3 (37.5%)
	Mean (SD)	Mean (SD)	Mean (SD)
Number of unique PTEs endorsed	6.87 (1.82)	6.50 (1.78)	6.13 (1.64)
ACES total score	7.0 (2.03)	6.63 (1.99)	7.50 (2.17)
Number of unplanned visits to OB clinic	5.72 (2.85)	5.00 (2.36)	6.63 (3.29)

Feasibility and Acceptability

- 56% of women who initiated treatment completed WET
 - Consistent with other first line PTSD treatments/usual care settings
 - Higher than PTSD treatment trials with PTSD/SUD population
- Patients reported high satisfaction with the treatment in both quantitative and qualitative measures

Change in PTSD and Depressive Symptoms Pre-Treatment, Post-Treatment, and 6 Months Postpartum Follow-up



Interventions for Trauma-Exposed Perinatal Women

- Survivor Moms Companion
 - Psychoeducational program for women who are pregnant or early postpartum with a history of trauma
 - 10-module manualized self-study program supported by weekly phone tutoring sessions with a health professional
 - Improves labor and delivery experiences
 - Improvements in postpartum PTSD, depression, and maternal-infant bonding
- <https://survivormoms.org/>

CBT Following Delivery of Preterm Infant

- 6-session intervention delivered 1-2 weeks postpartum for moms whose babies were born between 25-35 weeks GA
- Treatment delivered in the NICU
- CBT focus (e.g., psychoeducation, cognitive restructuring, muscle relaxation, trauma narrative)
- Improved PTSD and depressive symptoms compared to usual care

Summary

- Trauma history and current PTSD increases risk for a range of negative perinatal outcomes, including preterm birth, low infant birthweight, gestational diabetes, preeclampsia, and postpartum depression
- One potential mechanism explaining increased risk for negative perinatal outcomes is deficient ALLO levels
- Current evidence-based treatments for PTSD, including exposure-based interventions, are acceptable, feasible, and appropriate for treatment of perinatal PTSD

THANK YOU AND QUESTIONS?